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Washington Highlights

The depletion allowance clause in tax law probably will be left substantially as it now stands even though President Truman and his aides argue otherwise. This was indicated in the expressed attitutde of the tax-framing House Ways and Means Committee. The committee, which heard both sides in the tax controversy, pointed out that 22 of the 48 states have oil or gas fields and others produce minerals. Enough influence and votes probably could be mustered by these states to ward off any change in the tax law. The Chief Executive requested Congress to decrease the allowance for oil and gas from the present 27½ per cent to 15 per cent and for non-metallic minerals from 15 to 5 per cent. At a hearing of the House Ways and Means Committee, Russell B. Brown, Washington counsel for the Independent Petroleum Association of America and co-chairman of the industry's general depletion committee, said the existing tax provisions are now inadequate rather than excessive. Ernest Thompson, member of the Texas Railroad Commission, told the committee the proposed $200,000,000 in additional taxes on the industry would be poor economy. "But for the depletion incentive, the United States could not have oiled World War II," he said. "The oil margin between victory and defeat was too close for comfort. The reasons which prompted the Congress in 1918, 1926 and again in 1942 to retain the 27½ depletion allowance apply all the stronger today. We do not have enough oil to fight another war. Leave depletion as it is and the oil will be found." Thompson pointed to the Government's effort to find oil in the far Northwest during World War II. Called the Canol project, this futile and ineffective effort entailed an expenditure of more than $100,000,000.

President Truman is known to be considering favorably an invitation to attend the national American Legion convention in Los Angeles next September. Mr. Truman has indicated he would like to make the convention and would endeavor to arrange his schedule to include such a jaunt. President Miguel Aleman of Mexico has been invited to attend the convention at the same time.

Clear title to tidelands was given states in a bill approved by a House Judiciary subcommittee. The Federal Government under the measure would recognize state sovereignty over submerged coastal lands to a distance of three miles seaward. As pertains to Texas, state jurisdiction would be recognized to a distance of 10½ miles, because of conditions under which the state joined the Union in 1845. Pending in the House is another measure. It is backed by the Administration and designed to give the Federal Government clear title to the disputed lands. On the docket of the Supreme Court for March 13 are arguments in the Government's suits against Texas and Louisiana for control over the lands offshore the Gulf Coast. The judiciary subcommittee's bill provides that the states shall receive 50 per cent of the income from oil produced in the area beyond the three-mile limit and the edge of the continental shelf. In the case of Texas, it provides 50 per cent income from oil produced for 10 miles off the state's shore.

The Securities and Exchange Commission has endorsed legislation giving the Federal Power Commission authority over issuance of securities on interstate natural gas pipelines. The proposal is now before a House Interstate Commerce subcommittee. The Independent Natural Gas Association of America characterize the measure as unnecessary.

Sentaor Walter F. George, Democrat of Georgia, has called for a $6,000,000,000 slash in President Truman's budget to safeguard the nation's economy. George, chairman of the Senate Finance committee previously had favored a reduction of $3,000,000,000. Taking another look at Truman's spending proposals resulted in the Senator saying the figure could be doubled.

Republican party leaders generally agree that it is obvious that Mr. Truman is a candidate for re-election and predicted with much confidence that this time he will be beaten.

Sumner T. Pike has been chosen by Mr. Truman as acting chairman of the Atomic Energy Commission. Pike a member of the commission, and the only remaining original member of the group, takes the post left vacant by David E. Lilienthal who resigned.

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Possibilities of Secondary Recovery By Mining in the United States

Paul D. Torrey
Petroleum Consultant

Mining for petroleum is the most ancient known production method. The early mining operations consisted of the enlargement at the surface of natural seepages, and of shallow pits or short drifts into the outcrops of oil-bearing sands from which the accumulated oil could be removed by bailing. Actual underground mining for petroleum has been practiced in more recent years on a commercial scale in France, Germany, and Japan, and these operations have been described in detail by Rice (2); Dickey (3); and by Miller and Moore (4).

There have been several attempts to mine petroleum in the United States (4), the most recent projects being located in Miami County, Kansas; at Richards, Missouri; at Rocky Grove, Venango County, Pennsylvania; and in Southeastern Ohio.

Foreign Methods

Two distinct methods have been employed in foreign countries for the mining of petroleum. One involves draining of the crude oil into galleries either with or without lateral cross-cuts to provide additional channels, that has been used in France, Germany and Japan. The other method, which has been employed in Germany, involves the actual excavation and processing of the oil-impregnated sand.

Recent attempts at oil mining in the United States have differed from the foreign operations in that no drifts or cross-cuts have been dug into the oil-bearing formation, but rather it has been penetrated by a series of horizontal holes bored in a cartwheel pattern back away from the central shaft.

Results from Oil Mining

None of the recent attempts at oil mining in the United States are regarded as being economically successful, although the Rocky Grove mine, in Pennsylvania, is reported to have provided a great deal of valuable scientific and technical information. The other mines have been on such a small scale that no standard technique has been developed, similar to some of the foreign operations. The information available from the United States mines, therefore, is not adequate to determine whether mining operations might be economically feasible in this country.

Consequently, any study of the possibilities of oil mining in the United States must be based, at least in part, on the results obtained from past and current operations in other parts of the world. Such studies are limited by the rather formidable difficulty of converting facts and figures obtained from what can be considered to be small and antiquated operations to American standards of capital and operating costs, and American labor and material requirements. Therefore, in order to provide a direct comparison with alternate sources of oil, and as has been the case with the synthetic liquid fuel plants, it appears that American experience and research are going to be necessary to determine the feasibility of oil mining in the United States.

Results of European Mining

Rice (2) has stated with regard to the European oil mines: "From a purely technical standpont the results so far obtained have been successful and are being improved as experience is gained. Commercially, also, the results appear to have been successful under the conditions of limited natural oil resources and as a necessary consequence of the great need for petroleum products in the respective countries and of relatively high prices in their markets. Petroleum that has remained in the ground after a number of years of oil well development and pumping, until the project is no longer remunerative, has been recovered by underground mining and drainage methods, to the extent, it is claimed that an additional 40 per cent of the original content of the sand has been obtained from areas which 20 per cent had previously been obtained by wells from the surface.

"Whether or not the specific methods used at Pechelbronn and Wietze are applicable in certain fields of the United States with favoring conditions is a question, but the study of these methods is instructive and suggestive of modified methods which the writer believes may be applicable in at least some of the oil fields in America in which oil permeability of the sands is poor, where mining conditions are favorable, and the petroleum is of such special quality that a relatively high price is obtainable."

Possibilities in Pennsylvania

Dickey (3), more expeditiously, and with the use of much less strategic materials, in his more recent study of the possibilities of mining in Pennsylvania, likewise has expressed optimism over the results that might be obtained from mining operations under favorable conditions. He indicates that oil recovery might be doubled in the shallow Venango sands over that which has been obtained from intensive air and gas repressuring, and at a considerably lower production cost. His calculations are based on some modification of the Ranney method of mining, which combines gravity drainage into bored holes, in which charges of explosives have been detonated, with under ground repressuring, rather than an actual excavation of the sand.

The most recent information on foreign mining operations, derived

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The unit is constructed of a number of individual "petals" made of flexible sheet metal. These petals are mounted on reinforcing spring steel ribs, which in turn are mounted on a ring to form the Basket.

When running in the hole, the upward pressure of the fluid tends to close the "petals" thus providing fluid passageway between the Basket and the walls of the hole, without distortion of the Basket. As soon as the casing comes to rest, upward pressure by the fluid is relieved and the petals expand to contact the walls of the hole. Any tendency of fluid to move downward then presses the flexible petals more firmly against the entire circumference of the hole. Solids strained from the fluid tend to build a bridge inside the Basket which is thus converted into a one-way packer of great strength and effectiveness.

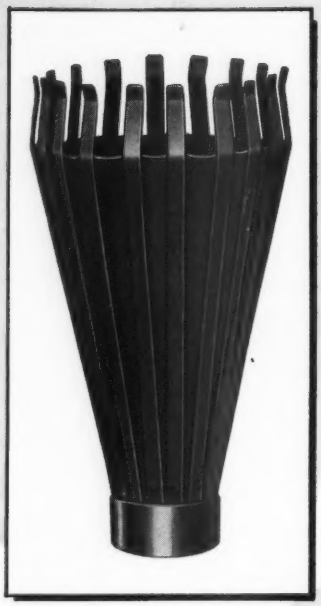
SIMPLE, EFFECTIVE ACTION

The "Metal Petals" not only expand to contact the entire circumference of large diameter holes, but also pack-off in holes of irregular shape; and the independent action of the individually mounted overlapping petals permits successful use of the Basket in casing programs with minimum clearances.

All-metal construction and design provide ample strength; lessen the possibility of splitting or otherwise damaging the Basket while it is being run in; and the metals are unaffected by usual acids employed for various purposes.

MOUNTINGS TO MEET ALL NEEDS

Baker Metal Petal Baskets are furnished mounted on plain or perforated nipples; with or without different types of Baker Whirler Float Collars; for a wide range of cementing applications. When conditions permit, it is recommended that Baker Metal Petal Baskets be "slidably" mounted to allow rotation, spudding, or reciprocation of the casing without distorting or damaging the Basket. Maximum efficiency of Baskets is assured when a Baker Model "G" Casing Centralizer is used immediately below the Basket assembly. For details see the Baker (or Composite) Catalog; or ask any Baker representative for specific recommendations.



TOP, Baker Metal Petal Basket (Product No. 340) ready for assembly into any required cementing hook-up. The strong, spring steel ribs, each with a "metal petal" attached, expand against the wall of the hole to form a safe "one-way" packer which prevents downward movement of the cement slurry.

LOWER VIEW illustrates the overlapping "petals" (each mounted on its individual spring steel rib) thus providing flexibility and freedom of expansion to pack-off around the circumference of large-diameter holes, or holes of irregular contours. A Baker Model "G" Casing Centralizer mounted just below the Basket is recommended.

LEFT, a popular hook-up consisting of a Baker Metal Petal Basket mounted on nipple, with a Baker Cement Whirler Float Collar with Solid Baffle (Product No. 305) which causes the cement slurry to pass through the baffled, side-whirler ports.

RIGHT- Where the casing is to be rotated or reciprocated while cementing, the Metal Petal Basket is "slidably" mounted between two Stop Rings. This permits free rotation, and ample vertical movement of the casing, without distorting or damaging the Basket.

HERE'S AN EXAMPLE OF STRENGTH

The Baker Metal Petal Basket holds a record for keeping cement ABOVE and OUT OF a "zone" possessing *lower formation pressure* and *higher permeability* than is likely to be encountered in any oil well. The "zone" was an *open* coal mine stope (lateral) through which a 16-inch hole had been drilled. A Baker Metal Petal Basket, mounted on 10¾" casing (used as the surface string) successfully supported a 640-foot column of cement slurry above the stope, without breakdown or leakage. This example not only demonstrates the bridging ability of the Basket assembly, but also is evidence of the tremendous structural strength which it possesses.

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principally from investigations of the Natural Resources Sections of occupying allied armies indicates that in fields where primary production has resulted in a recovery of approximately 20 per cent of the original oil content, an additional 40 to 45 per cent of the original oil content can be obtained by drainage into mine galleries and crosscuts. By actual excavation of the oil sand and treatment at the surface, an additional 70 per cent of the original oil content can be obtained. Such recoveries are excellent evidence of technical success, they are definitely superior to most of the secondary recovery operations in the United States, and they certainly encourage further investigation of mining possibilities in this country.

Conditions Affecting Success of Oil Mining

According to Rice (2) there are important geologic and economic conditions which must be present in an oil field before mining can be considered to be feasible. Some of these are:

The quality of the crude oil should be good so that it will command a high price.

Adequate acreage must be available.

For initial attempts the depth should not be greater than 1,200 feet.

The sand should contain a sufficient quantity of concentrated oil.

High pressure gas should not be present.

The sand should contain a minimum amount of water preferably under low hydrostatic head.

The sand should be continuous, and not markedly lenticular.

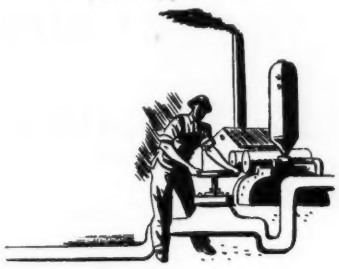
The sand should be sufficiently permeable to permit the oil to move freely by gravity drainage or by application of low pressure with gas or water.

There should be a good, firm bed of shale, at least 15 feet thick, above or below the oil sand through which tunnels can be driven by machinery rather than by blasting.

The strata should dip gently.

Experimental Oil Mine

Attention that has been given to the possibilities for the development and operation of an experimental oil mine in the United States by the Bureau of Mines, primarily for research purposes and secondary to determine the feasibility of extracting oil by mining has resulted in the following conclusions:



The proposal is feasible from a mining engineer's standpoint.

Safety problems will be serious but not insurmountable.

Total capital investment may be about $250,000 initially and may run to a total of $1,000,000 in five to ten years, with a mile or more of underground workings and with several wells drilled for experimental purposes and for ventilation.

The economic results of the mine may be predicted but cannot be proven at this time.

The nature and extent of research work which can be conducted in an oil mine can be suggested, but its direct value to the oil industry cannot be demonstrated until after the mine is placed in operation.

From the standpoint of diversity of technical personnel and background of training and experience, the Bureau of Mines is uniquely equipped to undertake the development and operation of an oil mine.

Location Important

An experimental oil mine should be located in an area where it is certain that the reservoir will respond successfully to water flooding, and shallow depth is considered to be important both from the standpoint of cost and because some of the great oil reserves of the United States which will not be recovered by presently known processes are principally in shallow fields. Oil reservoirs in which active water encroachment is present would not be adapted to mining because of low residual oil content, and because of the high cost of lifting large quantities of water to the surface.

Because of the low order of porosity occurring in many limestone and dolomite reservoirs, these rocks are probably not as suitable for mining as sandstones. In addition, most of the carbonate reservoirs contain poisonous hydrogen sulphide gas in appreciable quantity which would create an added hazard to underground work.

The total estimated cost of the mining project represents the cost of only a few deep wildcat wells, and is only a small fraction of the cost of current exploration work in the United States. Also, it is pertinent to emphasize that even if the mining of oil for the production of liquid fuels might not be profitable or competitive with liquid fuels obtained from shale or coal, there might be attractive possibilities for the mining of a crude that possesses a high content of good quality lubricants.

Two Objectives Important

Two principal objectives for an experimental oil mining operation in the United States are apparent from preliminary studies. The first objective, which has already received considerable attention in this paper, is to determine whether it may be more practical to obtain liquid fuels by the mining of petroleum than from shale and coal. The second objective is to develop plans for the operation of an experimental mine so as to supply the maximum amount of technical information, applicable to the solution of many problems of primary and secondary recovery, regardless of the economic yield.

Some engineers, who have been critical of certain aspects of the proposed plan for an experimental oil mine, have admitted the value of a project which would provide quantitative information on the most effective method of extracting the maximum recovery of oil from reservoir rocks. However, it is believed that an underground mining operation, involving the extraction of the sand and subsequent treatment at the surface is not necessarily to supply this information. Studies already contemplated by the Bureau of Mines if surface deposits of bituminous sandstones should provide cost figures and other data of satisfactory reliability.

Oil Sand Excavation Necessary

Some excavation of the oil sand will be necessary in driving tunnels

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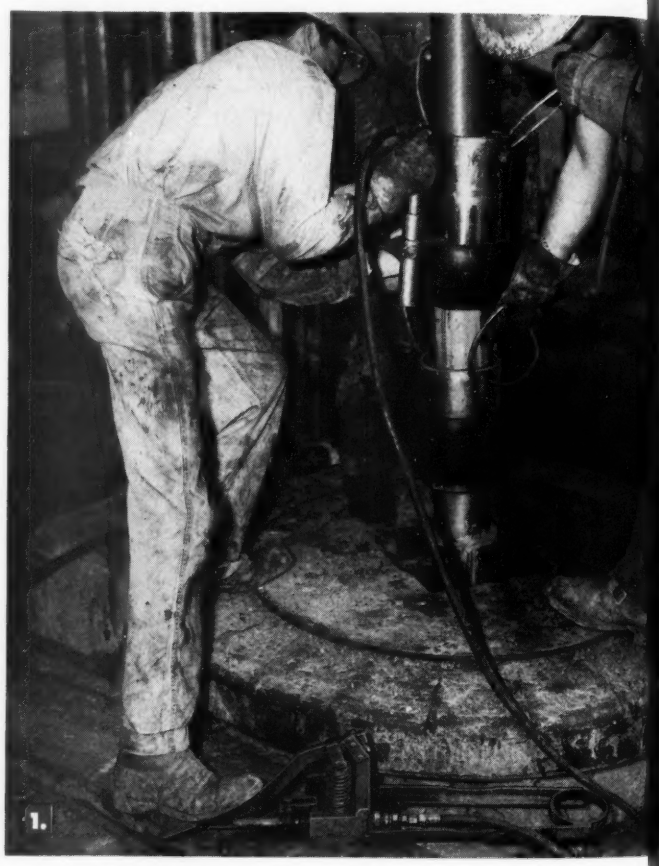
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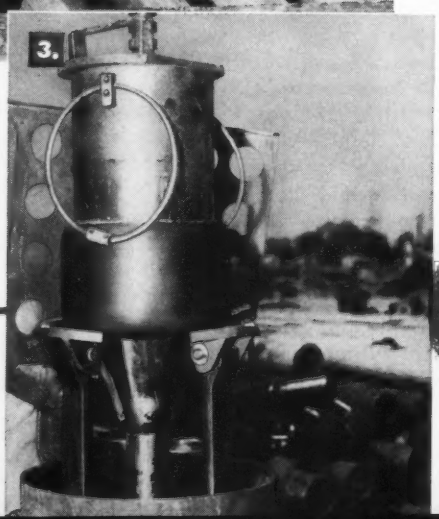
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1. New PB Hydraulic Push-Off Tool operated by PB service man while the crew is running pipe. Three strokes of the Push-Off Tool (controlled by foot pedal) give a hydraulic jack action which transfers the protector from sleeve to drill pipe in less than 4 seconds.

2. PB Protectors installed on racked pipe. Note how Push-Off Tool pump pedal is operated by hand.

3. Polished cone serves as expanding surface as the protector is hydraulically put on the transfer sleeve. New PB equipment is exceptionally light in weight—unloaded transfer sleeve for 4½" drill pipe weighs only 9¾ lbs.! This allows easy, quick handling by installation man.

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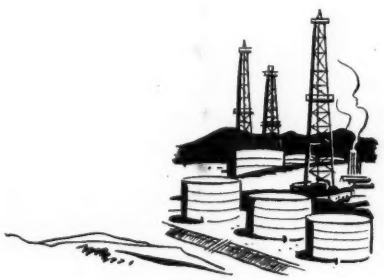
and cross-cuts for drainage studies, and the sand so obtained will be available for removal to the surface for treatment. However, it is obvious that the great amount of rock which would have to be removed in a mine planned for complete excavation of the sand, and the disposition of the residue at the surface presents very difficult physical and economic problems. (One ton of good quality Bradford sand contains less than 0.85 worth of oil at the current price.) Also, the removal of large volumes of rocks for oil extraction purposes would create a structural problem of subsidence and caving over wide areas which would make similar problems of the coal industry look small by comparison. There is, of course, the possibility that the residue sand can be returned to underground excavations at an added cost.

Present methods of mining, particularly with reference to coal, are, in a sense, outmoded and will, perhaps within the foreseeable future, be altered in important respects; as, for instance, by the underground gasification process. Consequently it should be recognized that the mining of any material for the principal purpose of bringing it to the surface for processing has basic disadvantages which the coal industry is already attempting to correct. For this reason, it appears much more sensible to devote attention to the recovery of the maximum amount of oil as it exists in the rock, either by alternate methods of mining or by means of wells, than it will be to remove the entire reservoir material for processing at the surface.

Shaft Mine Attractive

An alternate mining method, consisting of sinking a shaft, doing such other excavation necessary to provide direct access to the reservoir material, and supplemented by a large number of horizontal holes to provide greater drainage efficiency, has much more interesting possibilities. A mine of this type would remove only a minimum amount of the reservoir rock, and would be designed primarily to provide better control of the flow and drainage of fluids through the reservoir, and to provide facilities for research on oil recovery and other production problems. Some engineers who have given unqualified approval to an experimental oil mine for research purposes, have expressed the opinion that a mine of the alternate type might recover enough oil to repay in large part the cost of development and operation, a matter of considerable importance in the estimation of the total cost of the project. It has also been suggested that a mine of this type in a lenticular sand body should provide excellent underground storage for a valuable reserve supply of lubricating oils.



Research Opportunities

Numerous production research projects have been suggested that might be more readily, or more efficiently, studied if a mine in an oil-bearing sand were available for use. Three general research objectives seem possible and are summarized as follows:

Studies of characteristics of the reservoir rock and fluid, such as: (a) study of sand grain size and distribution, and studies of void sizes and shapes; (b) study of the effect of joint and fracture patterns, and of sealed joints on reservoir performance; (c) capillary and surface tension phenomena; (d) pressure-parting phenomena; and (e) chemical treatments.

Underground observations and measurements of selected oil development and production techniques such as: (a) study of gravity drainage; (b) effect of the detonation of explosives on oil sands; (c) use of plastics, resins, and other selective plugging agents; (d) effects of gun-perforating; (e) effects of mudding and cementing techniques; and (f) the recovery of the residual oil after water flooding.

Tests of possible new techniques for oil recovery, such as: (a) radioactive tracers; (b) solvent extraction; (c) application of heat; (d) experimentation with supersonic waves; and (e) chemical treatments.

In addition to experiments which can be conducted at the sand face, the shaft or shafts would provide full scale opportunities for studies of vertical flow of fluids and for pumping experiments. Both the shaft and associated wells could provide facilities for the testing and adjustment of electric logging and and radioactive instruments. The mine itself would be a source of large blocks of oil sand and large size cores for laboratory research.

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(3) Parke A. Dickey, "Oil Mining Possibilities in Pennsylvania," Penn Topographic & Geologic Survey. Progress Report 123 (Dec., 1939)

(4) H. C. Miller and C. L. Moore, "Mining for Oil—A Review," Secondary Recovery of Oil in U.S. A.P.I., 2nd Ed., 1949

Note: This paper is a partial abstract of that presented by the author before the Estes Park, Colorado, Meeting, Interstate Oil Compact Commission.

Sunray Issues Statement

Floyd B. Odlum, president of Atlas Corporation, and C. H. Wright, president of Sunray Oil Corporation, have jointly announced the sale by Atlas of 800,000 shares of Barnsdall common stock to Sunray. At a meeting Wright, Glenn J. Smith, L. W. Bennett and Edward Howell were elected to succeed Odlum, George H. Howard, L. Boyd Hatch and Oswald L. Johnston as directors of Barnsdall. Wright was named chairman to succeed Odlum. Wright made known that Barnsdall will discontinue its previously announced policy of buying substantial amounts of its own stock. Officers and financial advisers of Barnsdall and Sunray are working on a possible plan for the union of the business of the two companies. Such a plan when completed will be submitted to the board of directors of Barnsdall and Sunray. In the event the plan is authorized, it would be promptly submitted to stockholders of the respective organizations, Wright announced.

An Introduction to Modern Fire Control

George F. Prussing, Engineer

December Meeting

I once made a study of the probability of death from industrial injuries in the oil fields and found that as of that time the natural gas plant worker stood as high a chance of death from his occupation as did a member of a drilling crew. That was startling, because the accident frequency for drilling crews was the highest among all types of oil workers, while the frequency of accidents among gas plant operators was about the lowest. That was about fifteen years ago and since then the picture has changed, in both types of works. Yet it must be admitted that the potential danger of major disaster is still higher in the natural gas business than in any other petroleum operation. The reason is not hard to find and is well known to all of you. Volatile, flammable liquids stored and processed under pressure present more fuel energy when released than do other oil products. The heavier oils may be higher in BTUs but the rate at which these energy units are made available as fuel is insignificant compared to that of the volatile fractions with which you deal. The initial failure of a vessel, whether it be a still, a tank or other container, or even a pipeline or hose, seldom causes death directly. It is the vapor cloud, with its high specific gravity compared with air, and its high temperature when ignited, that does the damage both to life and surrounding property.

The ignition of a heavy vapor cloud spreading from a ruptured vessel creates the impression and some of the effects of a true explosion. Men are knocked down, wooden derricks may be wrecked in adjoining fields, and light structures of wood and steel have their walls and sometimes even their roofs blown in. Fires spring up all over the area wherever combustibles are present. The high temperature and amount of heat within the vapor cloud is sufficient to destroy completely the bodies of men trapped in it.

No traces other than a belt buckle and a key ring, were found to substantiate the death of two men who walked into such a cloud, thinking it was steam. No wonder then that men who work in your plants are inclined to "get the hell out of there" when anything happens. And by the same token, we are well justified in the extremely high standards of design and maintenance that are followed today by all prudent managements.

Looking back over the major disasters that have occurred in California during the past twenty-five years, we can trace the improvement of design from sole reliance on mechanical safety factors to the present concept that errors of human judgment must be expected and provided against.

A tank truck is being loaded at night at a gasoline plant. Liquid and vapor hose are connected and the flow is in progress. Through some human error of design or maintenance, one of the hoses blows off and knocks down the loader. By the time he recovers, the whipping hose and the dense fog cloud make it impossible to control the flow by operating the loading valve. Soon fire in neighboring field boilers ignites the vapor cloud and then hell is let loose. True, the flow from storage tanks can be manually shut off, but the fire persists until the truck and lines are empty and much damage is done. In this fire, six wooden derricks and seven or eight crude storage tanks were on fire at one time, in addition to the fires within the gasoline plant. The source of ignition was more than two hundred feet from the loading rack.

Of course you know the remedy—automatic valves, either excess flow or fusible link type, probably a combination of both, would have reduced the spill and may well have prevented the ignition by keeping the volume of gas released down to a point where natural dispersion would have taken care of it. But that was fifteen years ago.

Here are some brief accounts of fires and explosions that occurred 20 years or more ago:

A plant was being operated by contractor for thirty days prior to acceptance by owner. 12-15,000 gallon run-down tanks in one location took product from stabilizer liquid level regulator. Column pressure was 185 psi—each tank had a 2" relief valve set at 20 psi—reliefs were manifolded together in a 2" line. One tank ruptured, apparently through overfilling. Plant was shut down before flash occurred. Plant seriously damaged and one man killed. Nearly all tanks failed and parts of them flew as far as 1200 feet. Tanks were non-code and welding was not good, but failure was in operational technique and layout of rundown facilities.

At midnight while change of shifts was in progress, flash fire occurred at site of 6-17,000 gallon storage tanks. Overflow of one tank was suspected as initial cause of liquid release. During fire other tanks in group failed successively, due to inadequate reliefs. One feature of the fire was the ignition of a flow of 8,000 mcf of field gas when the plant intake let go.

Old Fires.

During a plant fire of unknown origin and while initial blaze was still small, operators left scene to call for help. Meanwhile 40# or higher field gas was flowing into shipping tank to provide flooded suction to shipping pump. Tank was designed for 15# and failed, long before the initial blaze could have affected its contents. 10,000 gallons of raw natural gasoline was dumped into the initial blaze. The subsequent damage to the plant was due to the burning of this added fuel. Here again there was no check on the operator. His skill in controlling the flow of high pressure gas into a low pressure vessel was all that prevented a disaster every time this method of pressuring was used. In an emergency, when he had to leave the premises, the inevitable happened.

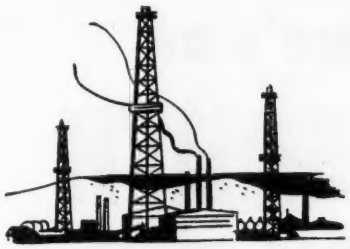
Vapor accumulated around the loading rack while truck was being filled—flash occurred and truck ran over—apparently no vapor hose used. The loader was burned.

High stage accumulator ruptured violently—no fire. This vessel was small—24″ x 72″—which accounts for the lack of subsequent vapor travel. Failure was due to poor welding—the welds failed at about 6000# (psi) tensile stress.

Operator closed by-pass valve on compressor being put on line before opening discharge valve. A fitting flew off, the building filled with gas and ignited, wrecking a portion of the plant.

Many of the old disasters were of this general type. Perhaps the most spectacular and costly in life and property was caused by a chain of circumstances in which the infatuation of a woman for another man than her husband was apparently the last link in the chain. In that fire nine persons were killed, a dozen more were terribly burned and the property loss went into six figures. The concussion of that blast, when the released vapors finally ignited, was felt over a radius of forty miles. And yet the cause of the disaster was as simple as it was weird.

The plant was under reconstruction of its stabilizing unit but it was necessary to continue operation and to ship the raw condensate by pipeline to a nearby refinery for processing. Storage space was at a premium and tanks were being filled beyond their normal limits. In transferring some of the product the line pump, normally used for shipping-out to the refinery, was being used to fill a horizontal, low-pressure vessel. An old employee was at the throttle watching the operations, which involved filling the tank above the top of the gauge glass. It was at this critical time that the operator was called to the gate and told that his wife, who had been mysteriously absent, had written her folks that the man with whom she had run away had abandoned her and that she needed money to return. The operator returned to his job physically—you can guess where he was mentally. A few minutes later liquid began to spew from the relief valve and then the pressure of the shipping pump hydraulicked the head out of the tank. The initial tank failure created only a mild shock but immediately its head was gone, the tank took off like a rocket and spilled its contents over the entire area. The real blast came minutes later when the released vapors were ignited.



That was more than sixteen years ago. Whether the lessons taught by that explosion have been written into modern operating procedures, I leave to your own best judgment. My own reaction was a distinct impression that pumps used for filling pressure vessels should be limited in pressure capacity to the safe working strength of the vessels themselves. The hydraulic shock that occurs whenever a vessel is overfilled, even though it has adequate vapor relief valves set at or slightly above its operating pressure, may seriously overstress the vessel: it may even burst it. In this case the line pump had a pressure rating out of all proportion to that of the vessel.

Equipment failures that have not been complicated by operational errors are fortunately rare and prove again that the behavior of materials is far more predictable than the behavior of people. Think for a moment of all the hundreds of thousands of pressure vessels both large and small that operate in California, then multiply that by about fifteen and you arrive at a staggering figure for the United States. And yet, out of all of these vessels, each year only a few actually fail because of improper design or, for that matter, because of poor workmanship. Vessel failures occur occasionally in surrounding fires because of lack of adequate reliefs—but far more often because of weakening of the vessel wall as the result of impinging gas blasts.

Not long ago a semi-trailer loaded with four propane spheres wiped off some of its vapor piping while trying at 45 mph to negotiate an underpass at a skew crossing. The vapors took fire and a torchlike flame from number one sphere impinged on the top of number two. At the same time a flame from the ruptured vapor line from number two struck the top of number one. Of course both safety valves operated but they were set for better than two hundred pounds. When the metal of the spheres softened and failed under the effect of the two torches the result was heard twenty miles away. The insurance company that carried an explosion policy on the spheres had to pay because, as the judge said, "If that wasn't an explosion, I don't know what an explosion is." He was probably right.

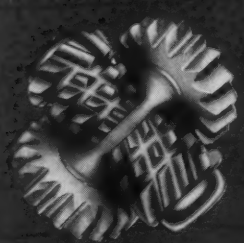
Where were the excess flow valves that should have stopped the flow of gas from the vapor lines? They were right there, where they should have been, in the spheres—but their *insides* were in the tool box of the truck, because they interfered with the loading of the tanks.

There have been a few failures as a result of lack of vessel inspection. I recall only one, and it caused neither fire nor damage. It was a vertical vessel used to knockout water and it failed right around the parting line between the water and gas. Fortunately it was practically empty at the time it took off, like a giant rocket sailing off of its base and landing outside the plant. There seems to be a notion that LPGs are corrosion free and that is largely so, but water certainly is corrosive and must be considered in every maintenance inspection program.

I think we can safely say that the plant that is turned over to the present operating crews here in California is about as well designed as human ingenuity can make it. Certainly we are allowing good factors of safety and where these *cannot* be mathematically determined, designers have over-designed rather than otherwise. Materials of construction are good, and weld inspection is almost perfect. Furthermore, through careful watch over regulation by governmental bodies, we have in general kept screwball restrictions to a minimum. One of the reasons why this has been possible is that most companies have taken a far-sighted view of their responsibility to the industry and have allowed the true facts of every accident to be known and used for the improvement of the arts of design and operation. You haven't hidden your mistakes, either from each other

There's an H.C. SMITH ROCK BIT

FOR EVERY FORMATION IN EVERY FIELD



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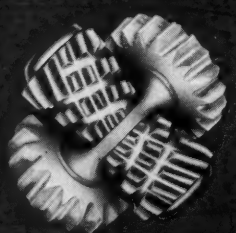

C-2K

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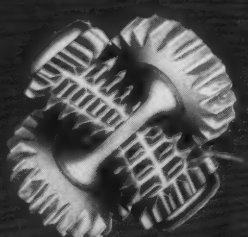

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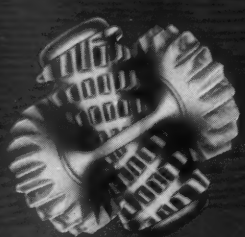
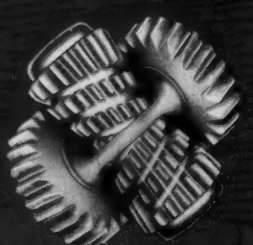


E-2E



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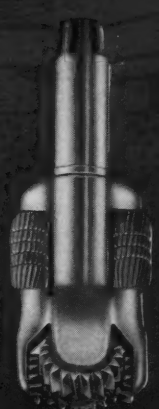


4-POINT
ROCK BIT

TWO-CONE
ROCK BIT

H.C. Smith
OIL TOOL CO.

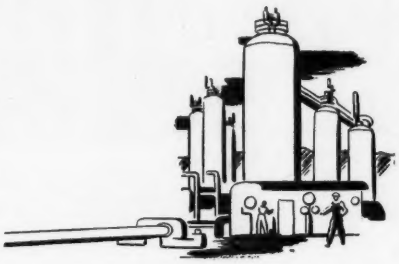
GENERAL OFFICES, EXPORT OFFICE AND PLANT

COMPTON, CALIFORNIA

or from those charged with the safety of your employees or the general public. The regard with which the engineers of the industry are held by the fire services is a fine commentary on their integrity and the attitude of the natural gasoline companies. To my way of thinking, it is a form of good public relations and also a true measure of progress.

What then can we say to the plant operator about his plant that he can carry back to his men for their guidance in avoiding trouble? We'll have to do more than give the kind of advice that we used to see posted on the old two-solution foamite tanks—"these solutions must be agitated for five minutes before each fire."

Fire prevention consists solely in keeping liquids and heavy vapors within their containers. It is just that simple—and just that difficult. LP Gases have three principal characteristics that make them hazardous—(1) they are under pressure; (2) they are heavier than air when vaporized; (3) they burn with high temperatures. There is always an interval between a gas spill and the resulting fire, depending on how far the gas must go to find a source of ignition. In that interval, men must think first of themselves but they can be taught not to become panic-stricken. "Get out of the vapor cloud and come back into the area on the windward side of the vapor to size up the situation" is still good advice and not too hard to sell the average plant employee. "Stop the flow of fuel"—whether it is liquid or gas, is an obvious bit of advice too often overlooked. If the plant is well designed, operators will know almost instantly that they see the source of the blow, how it can be controlled. Where valves are within the vapor area and cannot be operated without entering the vapor cloud, good judgment tells one to stay out until waterfog streams are available to make the job safe. Even in the absence of fire, one or two fog streams will blow away a vapor cloud and protect the operator while he closes a valve. Of course I am speaking of operating failures of gaskets and packing, or the rupture of small lines that can be shut in. Vessel failures that dump thousands of gallons are obviously beyond the scope of this discussion. In such events there is only one sane thing for any man to do and that is to see that he and everyone else he can yell at, gets out of the vapor area before it ignites.



Two years ago there was a spectacular fire in an eastern refinery. Ten were killed, 200 were burned, and there was $300,000 property damage. Packing blew out of a deisobutanizer reflux pump while it was being tightened up. The leak immediately flashed and the plast impinged on the column. This column failed after some time from weakened shell and released its contents. Lack of adequate fog streams to control heat and permit shutdown was blamed for the final failure. The crowd watching the fire was burned by radiant heat. The deaths were among plant men.

In refineries and other plants where LP Gases are handled in close conjunction with other operations, sources of ignition are far more common than they are in the typical gas plant. Perhaps that is why we have more fires and fewer disasters in refinery gas units. The time element between vapor release and ignition is usually much shorter—hence the vapor cloud area is smaller—hence there is less vapor fuel for the initial blast.

However, another reason for better experience in the refinery fires is the availability of water for fire control. Let me emphasize the word control. Modern practice in oil fires divides sharply between the control of running fires and those in open vessels. Fires in atmospheric storage tanks from which the roofs have been blown are still put out with foam and nothing has taken its place, in spite of all that has been done with other fire control devices. Modern air foam is a far cry from the old chemical foam systems that we built at such great cost thirty years ago, but it is still foam. There is nothing better where you have to deal with a great of burning liquid surface.

In the gas plants, however, fire extinguishment is wholly a secondary matter. The important job that must first be done is to neutralize the heat of the fire so that it will not cause pipes and vessels in the neighborhood to weaken, or their contents to expand and cause hydraulic failures. Only water can do this because only water is cheap and plentiful enough to soak up the tremendous heat of a gas flame. It is well to remember that regardless of whether it is liquid or vapor that is being spilled, the flame will continue so long as there is fuel to supply it. Heat control must continue that long.

Modern technology of fire control is built around the use of water fog as a cooling agent. The history of this technique is of especial interest to us in this group because the original work in the development of water fog was done at the Vernon Refinery of the General Petroleum Corporation more than twenty-five years ago by Ben Moeller. He was looking for a means of getting foam onto the surface of a burning oil tank without submerging it in the oil. One of the devices he tried was a nozzle in which he impinged two streams of foam solutions against each other at high velocity. Thus he made a foam-fog that fell like sloppy snow onto the surface of the burning tank. It worked perfectly when tested on a tank that wasn't on fire but wasn't worth a second try on a burning tank because the upsweep of the flames wouldn't let the fog-foam reach the surface. So Ben laid away the fog nozzle and went into the development of a porous asbestos sock. That sock, by the way, is now known as the Moeller Foam Applicator, and it has made him famous all over the world.

The fog idea was dead so far as foam went, but it was picked up and exploited by a clever fire chief in the Los Angeles County Fire Department as a means of creating a cooling shield of fog that would permit men to approach the source of a fire. Captain Griswold demonstrated the value of water fog in fire after fire in his Santa Fe Springs district and before long it became the recognized means of attacking any type of fire other than those in tanks. Even city fire departments have adopted water fog

(Continued on Page 24)

With Drilling Contractors

Camay Drilling Company has been given a six-month drilling contract by the Long Beach Oil and Development Company. The drilling program has been approved by the Long Beach Harbor Board. Camay's plans call for two rigs working on the sinking of new wells and one rig redrilling wells damaged by the recent earthquake. The drilling program involves 136 wells now shut down. These wells are inactive due to casing collapsed by movement of the earth in the recent severe local tremors. During the past six months, the contract organization has had two strings of tools rotating in the area for Long Beach Oil. Well drilling in the harbor area is unique and probably more interesting than oil development anywhere else in the state.

The majority of the new wells are bored from man created surface islands. The oil zones are penetrated by drilling under exact control to bottom hole sectors. These holes follow cylinder pathways 50 ft. in diameter and hundreds o fft. removed from the surface locations of the wells.

The California chapter, American Association of Oilwell Drilling Contractors' recent meeting at the Crystal Inn at Bakersfield was featured by an address by J. V. Dunbar. Dunbar, who is president of Dunbar Drilling Company of Salem, Illinois, discussed contracting conditions and aims of the AAODC. A number of safety films of operations in California and Mid-Continent districts were shown at the meeting.

F. W. Brigance, chairman of the AAODC transportation committee, has been active in formulating a suggested program for the work of this group during the current year. Fundamentals of the program will include representation at hearings before regulatory bodies when unjustified rate increases are up for consideration; establishing of a procedure whereby freight invoices can be checked to determine if the drilling contractor was overcharged; and the gathering and dissemination of data from the various oil producing states regarding freight rates as they affect the drilling contractor. Brad Mills, executive vice president of the association, made this report.

California directors of the AAODC at the directors' meeting in Wichita, Kansas, included E. C. Ned Brown, Ralph Marshall and D. H. (Doug) Graham.

Barnes & Shadrick has completed a flowing well for Steele Petroleum Company in the Tejon Hills. It is Roco No. 14 on Sec. 15-11n-18w, which started off from 581 ft. putting out 120 barrels a day. The project since has been beaned back to the rate of 50 barrels daily.

Contractor on Macson Oil Company's Oasis Ranch No. 1 on Sec. 7-30s-29e at West Edison is Brown Drilling Company. Location is northwest of production developed last year by the Independent-Oceanic combination on the Alexis Day property.

Lido Drilling Company has finaled Wilshire Oil's A. H. Heller No. 64-6 on Sec. 6-9n-26w at South Cuyama. Initial output from a plugged depth of 4395 ft. was at the rate of 315 barrels daily.

Monthly Tour, house organ published by the Thomas P. Dike Drilling Company, has won recognition from Freedom's Foundation, an organization which makes yearly awards for the most outstanding work toward bringing a better understanding of the American way of life. The recognition was emphasized by an honor medal preented to Pike by Reese H. Taylor, president of Union Oil Company. The presentation was made at a meeting of Freedom's Foundation, held under the auspices of the Advertising Club of Hollywood. The drilling company, which recently distributed more than $85,000 in profit-sharing checks among 158 members of the organization, issue the Monthly Tour primarily for the purpose of giving employees the facts on company operations.

Pacific Drilling Company of Long Beach will be the contract driller on Herbert H. Myers' new well in the Chino area of San Bernardino County.

Union Oil Company currently is using nine contract strings of tools, including one repair crew in its California and Washington field operations. Four drilling crews and one repair crew is busy in the Los Angeles Basin district, two in the Ventura district, one in San Joaquin Valley, and one in the state of Washington.

Nevada Oil Fever High

Both major and independent oil companies are continuing their respective leasing campaigns in White Pine and Elko Counties, Eastern Nevada. Standard of California and Continental Oil Company are understood to have clasped hands in an operating agreement calling for joint exploration on no less than 250,000 acres. Standard and its subsidiary, the California Company, plan new offices at Salt Lake. This move is analyzed as evidence of the added interest in new oil prospects in Nevada, Utah and Idaho. More than 1,000,000 acres already has been leased by California operators in the two Nevada Counties.

Field Development

Los Angeles Basin

Placerita Drill Program Finished

Mawaco Development Company announces the drafting of plans for a major oil development campaign which will involve field operations in California, Utah, Colorado and Canada. The company at present is winding up drilling obligations in the Placerita and Newhall areas. Indications are the company's next field probably will be on a 2600-acre block of leases southeast of Cuyama Valley production in an area where Richfield holds extensive ground. Mawaco also is understood to have acquired a large block of leases in the Moab area, Grand County, Utah, where the first well will spud next summer. The company also has taken an option on some 1200 acres of potential oil land in the Rangely area, Colorado. Mawaco engineers currently are in Canada negotiating for part or all of a 60,000-acre block in the Fraser River country.

Wilmington Test Coring

Airways Petroleum Corporation at last reports was making hole below 5450 ft. with its Santa Susana No. 1 test on Sec. 16-4s-13 in the North Wilmington area.

Athens Try Starts Work

Athens Oil Corporation is starting its Rockstroh No. 1 test at Northwest Athens on Sec. 12-3s-14w, near the intersection of 122nd street and Halldale avenue.

San Bernardino Venture Slated

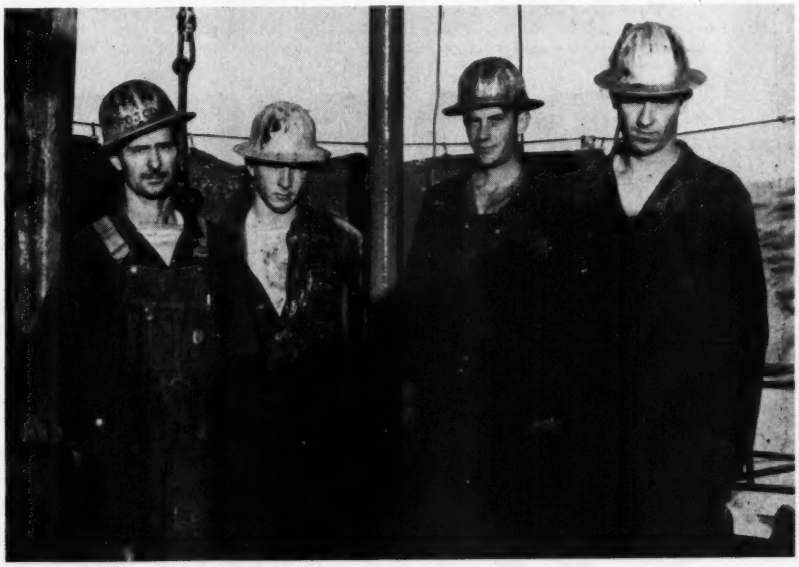
Herbert H. Myers of Texas has returned to California operations and is understood planning to drill a well on the Fuqua or Borda lease in the Chino area of San Bernardino County. Milton L. Kane, who has blocked up 1300 acres in the area, has assigned them to Myers. Location for the well is 330 ft. north and 330 ft. west of the center of Sec. 13s-8w. It probably will go to a minimum depth of 4300 ft. Twenty years ago a well was drilled on the Fuqua property and is credited with producing oil in quantity for a time. Water, however, could not be shut off and the project was relegated to history. Myers some months ago paid $6,000,000 for Republic Petroleum Company. Bill Geis and Ralph Arnold are geologists for Kane. In Carbon Canyon, Royalty Service Corporation Ltd. is drilling at 1405 ft. with No. 32-1 wildcat on Sec. 32-2s-8w. C. H. Howe's Downs No. 1 on Sec. 31-2s-8w is an abandonment at 1731 ft. Near Colton, John W. Brashears is rigging Dana No. 1 on Sec. 26-1s-5w.

Aliso Canyon Test Digging

After losing and recovering fish, Union Oil Company's Mission-Adrian No. 2 test on Sec. 35-3n-16w is making rapid drilling time below 7100 ft. In the field proper, Tide Water Associated is rigging up for Porter No. 27 on Sec. 28-3n-16w.

Del Valle Active Area

Southern California Petroleum's Kinler No. 1 on Sec. 16-4n-17w in the Del Valle area is in the completion stage. Total depth is 7653 ft., with plug at 7400 ft. The 7-in. casing is cemented on top of plug. Field men report the well as very promising. Southern California Petroleum and Fred Goodstein, Casper Wyoming operator, are joint sponsors of the project. Russell Havenstrite's Lincoln No. 16 on Sec. 16-4n-17w is making



In the Elk Hills field, Rocky Mountain Drilling Co., rig No. 15 at Navy well No. 357-19-R. left to right: Roscoe Pierce, driller; H. M. Smith, racker; E. W. Kaich, lead tong; D. O. Ercanbrack, derrickman.

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hole at 11,640 ft. Information on the well is being closely withheld and what the sand being drilled shows is more or less a matter of conjecture. The Bolsa Chica, British American and Humble Oil Strwan No. 1 wildcat on Sec. 10-4n-17w is drilling ahead at 8400 ft. The well is credited with numerous showings, but there is no doubt as to whether they are commercial or not. Standard of California is starting two new jobs in the Del Valle field. They are Sepulveda No. 12 on Sec. 17-4n-17w and Sepulveda No. 17 on Sec. 8-4n-17w.

Calabasas Test Digs

Prospect drilling has reached 1440 ft. in the Trower and Trower No. 1 exploratory well on Sec. 32-1n-17w in the Calabasas area, Los Angeles County.

Solemint Test Idle

United Oil Company has suspended drilling at 2601 ft. in its Erwin No. 1 on Sec. 20-4n-15w in the Solemint area. The well at last reports was still idle.

Placerita Well Quits

Contratto Oil Company's Jill No. 1 test on Sec. 29-4n-15w at Placerita has been abandoned at 1681 ft. Also given up is C. M. Rood's Anita No. 1 on Sec. 14-4n-19w.

San Fernando Wildcat Fishes

Fishing drill pipe is the current status of Standard of California's Woo No. 1 test well on Sec. 19-2n-15w in the San Fernando area. The project is down 9205 ft.

Castiac Test Rigs

Humble Oil & Refining Company is rigging its N.L. & F. No. 2 test well on Sec. 14-4n-17w in the Castaic Junction area.

Newhall Try Works

General Petroleum Corporation is nearing the spudding-in stage with its Bermite No. 1 wildcat on Sec. 25-4n-16w in the Newhall area.

Castaic Try Idle

Reported idle at 3939 ft. is the Atlas Oil Company Acosta No. 1 wildcat on Sec. 24-5n-16w in the Castaic area of Los Angeles County.

Whitney Canyon Wildcat Deeper

Having deepened their Phillips No. 1 at Whitney Canyon from 981 ft. to present level of 1900 ft. Independent Exploration and Rothschild Oil appear ready to give the venture up as a production failure. The well, on Sec. 6-3n-15w, is a half mile south of wells producing for Standard of California at Placerita.

Corona Try Digs

Near Corona in Riverside County, Kenneth R. Reed is drilling at 300 ft. with his Kincheloe No. 1 wildcat on Sec. 17-4s-6w. The 10-in. casing was cemented at 286 ft.

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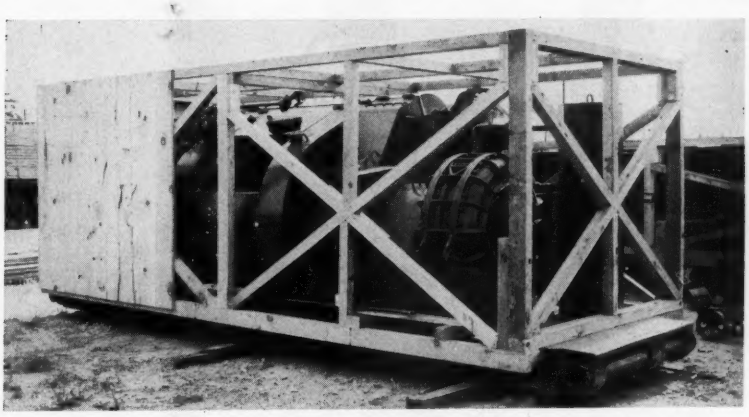

Above Shows Skeleton or Framing, All Bolted Construction, Before Waterproofing and Sheeting

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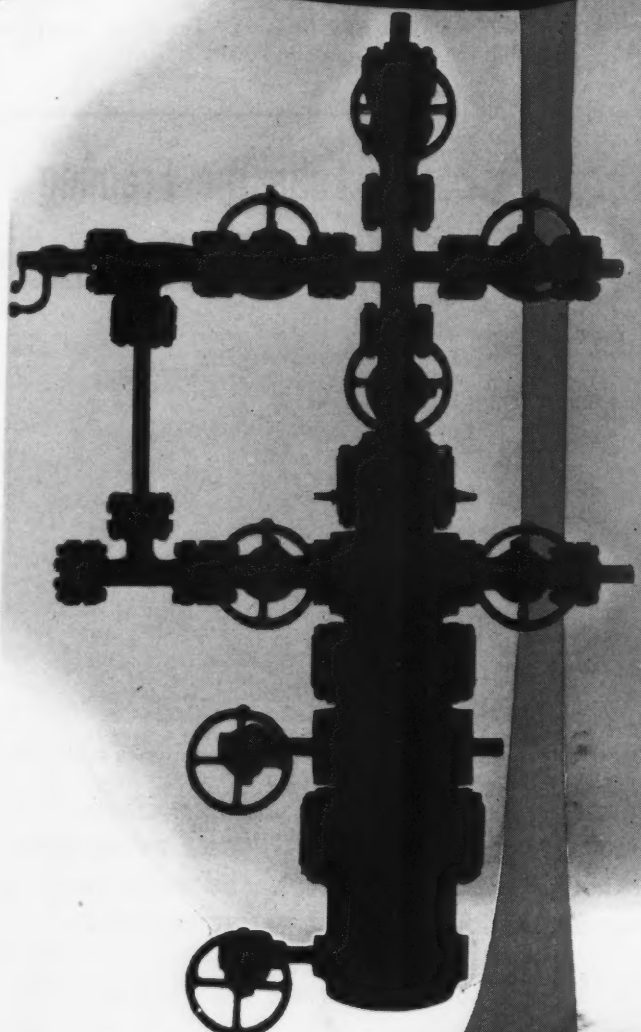

Or it won't feel a roughneck's hand on its valve wheel!

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San Joaquin Valley

Tejon Test Interesting

Northeast of Tejon production, D. K. Associates is working with its Coral No. 1 on Sec. 18-11n-18w, which to 1352 ft. gives much encouragement. Location is a mile and one-half southwest of the shallow discovery scored by O. M. Slosson. It is running some 100 ft. higher on structure than Ohio Oil's No. D-3. Enterprise Oil's R.E.P. No. 46-36 on Sec. 34-11n-19w, a westerly offset to the Bright pool opener, is drilling at 4200 ft. Tejon Syndicate is drilling at 450 ft. with its No. 83-11 on Sec. 11-10n-19w, south of Tejon production.

Comanche Pt. Wildcat Quits

Drilled to a total depth of 1398 ft. in basement, Young Bros. & Associates has quit its Tejon No. 1 at Comanche Point on Sec. 36-23s-29e.

Tulare County Wildcats Drill

Trico Oil & Gas Company at last reports was drilling and spot coring at 11,060 ft.with its Tulare Farms No. 55 wildcat on Sec. 27-24s-23e in the Trico area, Tulare County. Frank and Thomas Cannella are making hole below 550 ft. with Exploration No. 2 on Sec. 20-24s-28e.

Madera Test Quits Hunting

von Glahn Oil Company's Mendoza No. 1 exploratory venture on Sec. 24-10s-17e in the North Madera area has been abandoned at 4120 ft. in granite.

Edison Test Drills Ahead

Franco-Western Oil Company is drilling ahead at 640 ft. with its Small No. 1 on Sec. 35-30s-29e, southeast of the Edison field and east of Mountain View producing wells. Golden Bear Oil Company is starting Community No. 2 on Sec. 35-30s-29e in the Edison area. Macson Oil Company's Oasis Ranch No. 1 on Sec. 7-30s-29e is drilling at 3600 ft. The company has location for Pilling No. 2 on Sec. 21-30s-29e.

Cuyama Valley Still Develops

Richfield Oil Corporation's Apache Unit No. 1 at the far south end of Cuyama Valley on Sec. 22-8n-24w is awaiting heavier equipment to drill deeper from 9603 ft. No showings of any consequence have been found to present depth, but the project is going deeper for a more conclusive test and for geological information. Two and one-half miles southeast of production, Douglas Oil Company's Cuyama No. 85-16 on Sec. 16-9n-26w at South Cuyama is drilling at 4240 ft. On the Stublefield Ranch at the east fringe of Cuyama Valley, R. B. Jackson has abandoned No. 1 on Sec. 20-10n-24w at 2950 ft. in gray sand. Southeast of the Stublefield duster, Superior Oil's Hudson No. 85-26 on Sec. 26-10n-24w is drilling at 1598 ft. Three miles northwest of Russell Ranch production, Superior's Government No. 18-2 on Sec. 2-11n-28w is coring below 5900 ft. A formation test of the interval of 5350-5480 ft., in what was believed as the equivalent of the Colgrove zone, showed oily, gassy mud.

Lost Hills Test Drills

General Petroleum's deep test in the Lost Hills area is drilling on down at 9000 ft. It is called Williamson No. 33-11 and is on Sec. 11-26s-20e.

Elk Hills Group Train

The Navy Department is putting in action an oil reserve training group at Elk Hills. When fully manned the group will be composed of more than 250 naval reservists or civilians, with the necessary oil experience to qualify for enrollment.

Raisin City Well Flows

After flowing an estimated 3,000,000 cubic ft. of gas a day. Northwest Syndicate and British-American Oil Producing have shut in their Raisin City outpost well on Sec. 9-15s-17e, Fresno County. The well, called KRD No. 82A-9, bottomed at 5246 ft. and evidently showed no oil nor water. In the Mendota area of the county, L. M. Lockhart's McNear No. 1-29 on Sec. 29-14s-15e is drilling around 6000 ft.

Gould Hills Wildcat Digs

Exporatory drilling is going forward at 5872 ft. in the Los Nietos Company Richardson No. 77X-7 on Sec. 7-29s-21e in the Gould Hills area, Kern County.

Victory Oil Co., contractor for Long Beach Oil Development Co.'s well W-20 at Terminal Island. Left to right: D. R. Bain, derrickman; E. B. Thumbley, piperacker; J. C. Harley, lead tong; H. M. Orr, cathead; George Lambert, driller.

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Sunset Try Digs

Richfield Oil is drilling at 1010 ft. with its Osborn No. 1 wildcat on Sec. 34-12n-23w, approximately one and one-half miles northeast of production in the Sunset field east of Maricopa.

Kings County Discovery Scene

Shell Oil Company appears to have made an important gas discovery in Kings County. The company made the find with its Harvester Unit No. 1-1 test well on Sec. 11-23s-21e in the Harvester area. The project found a sand in the interval of 2781-2817 ft. and on formation trial put out an estimated 6,000,000 cubic ft. of gas daily. Total bottom is 4000 ft., with plug at 2847 ft. and casing set on plug. Location falls about 10 miles northwest of the Trico gas field. At Pyramid Hills in Kings County, Pacific Oil & Gas Development Corporation's Sharpe No. 76-28 on Sec. 28-24s-18e is coring below 2400 ft. Barnsdall Oil's Lynch-Mauren No. 88-9 on Sec. 9-23s-17e at Reef Ridge is drilling at 6240 ft.

Atascadero Wildcat Digs

Petrolia Corporation has spudded its H. & G. No. 1 wildcat on Sec. 26-28s-12e in the Atascadero area of San Luis Obispo County. This area was explored with the drill last summer by the Independent Exploration, Universal Consolidated-Gene Reid interests. Southwest of the Well, E. T. Willard's Rector-Avenales No. 1 on Sec. 5-29s-19e in the Temblor Range area is drilling at 2100 ft. Texas Company's Blakey No. 1 wildcat on Sec. 16-32s-20e on the Painted Rock anticline is drilling and coring hard shale at 6100 ft. Continental Oil's Munsey U.S. L. No. 1 test at Crocker Flat has been abandoned at 9083 ft. in siltstone.

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Lagol Try Drills On

Humble Oil & Refining Company's Berylwood Investment No. C-1 on Sec. 11-2n-20w in the Lagol area, Ventura County, is drilling at 4200 ft. The company has made location for Theo. Hammond No. 3 at Ojai on Sec. 12-4n-23w.

Ventura Avenue Active Field

Shell Oil Company has completed two new wells in the Ventura Avenue field. Schmidt No. 2 on Sec. 21-3n-23w at the far northwest tip of the field was finaled for 656 barrels of oil and 299,000 cubic ft. of gas a day from 11,200 ft. At the west border of the field, Taylor No. 270 came in from 11,950 ft. for 890 barrels daily. Lloyd Corporation's No. S-1 on Sec. 19-3n-12w is drilling on down at a depth of 6412 ft. Los Nietos Company has reached a depth of 3629 ft. with Fraser No. 88-14A on Sec. 14-3n-23w. Samuel Bennett's Bennett-Foster No. 1 on Sec. 28-3n-23w is making hole at 9031 ft. Tide Water Associated is starting two new D-7 zone wells. They are Hartman No. 34 and McGonigle No. 28.

Rio Vista Well Flows

Brazos Oil & Gas Company's Langhart-Spreckles No. 1 on Sec. 23-4n-3e at Rio Vista in Sacramento County has been shut in, after flowing at the rate of 4,000,000 cubic ft. of gas daily from 4560 ft.

Timber Canyon Drill Job Works

On the E. P. Clark lease in the Timber Canyon field, Richfield Oil Corporation is rigging to commence drilling No. 9 well on Sec. 13-4n-21w. Ventura County.

Monroe Swell Wildcat Quits

Texas Company's Doud No. 1 on Sec. 24-19s-6e in the Monroe Swell area of Monterey County has been abandoned at 4120 ft., following run of electric log and dipmeter. Location fell eight and one-half miles northwest of the community of King City.

Sespe Creek Well Bailing

Sweet Development Company at last reports was bailing with its Faught No. 1 test well on Sec. 17-5n-19w in the Sespe Creek area, Ventura County. Total depth is 2012 ft. At Santa Paula Creek, Robert S. Rocco's Lottie B. McFann No. 1 on Sec. 15-4n-21w is making hole at 2450 ft.

Moorpark Test Drills Ahead

On Sec. 2-2n-19w near the town of Moorpark, V. A. Porter is making hole below 600 ft. with his Smith No. 1 exploratory well. The area has held the favorable regard of some geologists for many years.

Boulder Creek Wildcat Idle

Drilling has been suspended at 5905 ft. in the Honolulu Oil Corporation Hinman No. 1 on Sec. 17-9s-2w in the Boulder Creek area of Santa Cruz County. Merle W. Wheeler's Wheeler No. 1 test at West Moody Gulch on Sec. 69s-2w is idle at 271 ft.

Petaluma Try Digs

Exploratory drilling has gone beyond the 1200-ft. mark in Wa-Me-Co Drilling Company's Sartori No. 1 well on Sec. 24-5n-7w in the Petaluma area, Sonoma County.

San Marcos Adds New Try

Lewis W. Welch is ready to start his third test well in the San Marcos area, Santa Barbara County. The well, Lazy R. G. No. 3, will drill 2000 ft. south and 150 ft. east from the northwest corner of Sec. 29-6n-29w. J. R. Pemberton's Tecolote No. 3 on Santa Rosa Island off the Santa Barbara coast is coring at 1600 ft. Location is graded for the Daniel Fisher, Operator, Hollister No. 1 on Sec. 3-4n-29w at Goleta.

Bardsdale Well Good

Union Oil Company's Geis Robertson No. 23, a new well on Sec. 12-3n-20w at Bardsdale, is putting out 180 barrels daily, cutting 32 per cent, along with 102,000 cubic ft. of gas a day. The company is beginning work on Irwin No. 2 on the section. Cleveland Oil Company, meantime, is drilling at 5843 ft. with its Elkins No. 5 on Sec. 7-3n-19w.

Rocky Mountain Drilling Co., rig No. 15 in the Elk Hills field at Navy well No. 357-19-R. left to right: Joe Phillips, derrickman; Hubert Redding, lead tong; V. R. Blair, racker; C. A. Mitchell, driller.

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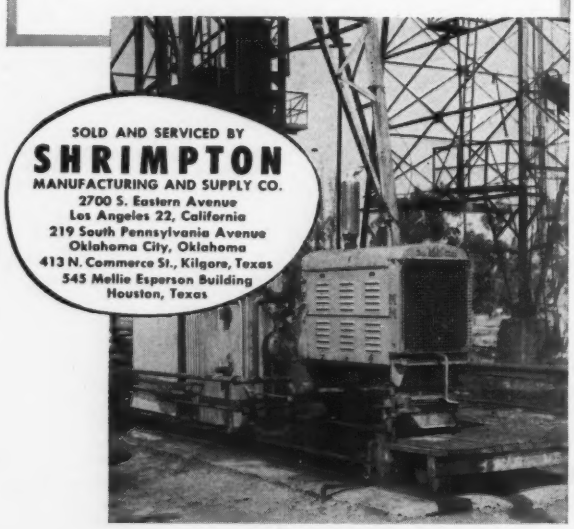

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San Miguelito Venture Deeper

Continental Oil's deep test well, Grubb No. 65-E, on Sec. 25-3n-24w in the San Miguelito field is making hole at 16,650 ft. If the lower formations fail to yield commercial oil, the well will be finaled in the normal field horizons.

Arroyo Grande Wildcat Drills

On Sec. 5-32s-13e in the Arroyo Grande area, C. W. Colgrove's Elberta No. 1-5 is digging steadily ahead below 8000 ft. Production was opened up in the area by Consolidated Bituminous Rock Company in 1910.

Cat Canyon Drill Scene

At Cat Canyon, General Petroleum Corporation is drilling at 2905 ft. with its Idoil No. 24-22 on Sec. 22-9n-33w. Standard Oil's Alexander No. 54 on Sec. 21-9n-33w is down 5349 ft. and going ahead.

Padre Canyon Well Drilling

C.C.M.O. Company's Hobson No. A-23 in the Padre Canyon area is making fast time with the drill below 3650 ft. The Padre Canyon field was discovered by Continental Oil Company in 1936.

South Mtn. Job Digging

Havenstrite Oil Company as this is written is digging at 1436 ft. in its Price No. 14 well in the South Mountain field on Sec. 19-3n-20w.

Santa Fe Drilling Company was the contractor on Shell Oil Company's important new gas discovery well in the Harvester area of Kings County. The find is likely to set off a wave of new drilling at Harvester and other areas in Kings County.

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Rocky Mountain NEWS

Colorado—Idaho—Montana—New Mexico—Utah—Wyoming—Western Canada

Wyoming

The oil spotlight in Wyoming shifted alternately between the Sussex-Meadow Creek areas in southeastern Johnson county and the new Glenrock field development throughout February. With many operations elsewhere in the state marking time for the advent of spring weather, the oil fraternity turned most of its attention to these two "hot spot" areas along the southwest side of the big Powder River Basin.

Ten rigs were drilling in the Sussex, Meadow Creek and North Meadow Creek areas, and a dozen additional sites had been staked in this active area about 14 miles northeast of the large Salt Creek field.

Interest was stimulated by Continental Oil Co.'s discovery of oil in two sands, the Shannon and Wall Creek, in the Meadow Creek wildcat drilling four miles south of the Sussex unit, where the firm has developed nearly 3,000 barrels per day production in a little over a year. The Meadow Creek venture found water in the Sussex sand, then tested good oil shows in the Shannon and Wall Creek and was last reported drilling below 6,300 feet on the way to Lakota sand.

Between Continental's Sussex and Meadow Creek units lies an area variously called South Sussex and North Meadow Creek. Here Delhi Oil Corp. brought in a 400-bbl. 40 gravity oil discovery in the Sussex sand around 4,000 feet, and is now completing the first offset for indicated similar production. In mid-February, Delhi and its associate, the Mimi Oil Co. (formerly American Liberty) staked out eight new locations prior to a rapid development program. Previously Bill Tomberlin, Casper independent with production in the West Fiddler Creek area, announced a three-well wildcat program for the area immediately east of Sussex and Meadow Creek.

Events in the booming Glenrock area were clouded by the "tight hole" status of three wells drilling northeast of the town. Steelco Drilling Co. of Chicago, which drilled the 500-barrel discovery well a quarter-mile north of Glenrock's town limits, was drilling below 6,500 feet in an offset one-half mile west of the discovery, after disclosing a promiing show of oil in the Wall Creek. Phillips Petroleum, reportedly 7,200 feet down in another offset between the discovery and the second Steelco well, gave out absolutely no information. A second Steelco well, drilling one and one-half miles northeast of the discovery, was 7,500 feet deep and an estimated 1,000 feet lower structurally for the Muddy sand, the producing horizon at 7,206 feet in the discovery.

Meanwhile Phillips commenced drilling the first town lot location in northeast Glenrock and two other operators applied to the town council for drilling permits inside the town.

Although Steelco had not sold a barrel of oil from its discovery well, the firm plans to continue an active wildcatting program in the area. Jack Steele, president of the firm, disclosed plans for drilling another wildcat test a little over two miles east of the discovery, on the Herman Werner ranch in section 35-34n-75w, with the leases held by Claycomb and Dyer. The firm also applied to the town council for a permit to lay a pipeline from the discovery well to the railroad right-of-way in the heart of the town, indicating plans for loading oil on tank cars for shipment to the east. The Stanolind pipeline running only a few feet from the well is loaded to capacity of 65,000 barrels oil per day, moving to refineries in the Chicago area.

Another interesting development came to light in the Glenrock area when Reserve Drilling Co., an independent with production in Fiddler Creek, announced location for a well to be drilled on the west side of the Continental Oil Co. refinery in Glenrock. The Steelco discovery is located on the east side of the refinery.

Several wildcat tests have been announced for the south side of the Powder River Basin following developments in Glenrock. Ajax Oil Co. made location for the No. 1 Hawley-Scott in 12-33n-75w, in the Boxelder Junction area, Converse county. The venture will test Muddy sands productive in the Glenrock area four miles to the northwest. El Capitan Drilling Co. of Wichita made location for the No. 1 Adair in 30-32n-71w, three miles southwest of Douglas, county seat of Converse county.

Frontier Refining Co. of Denver leased 11,000 acres from the large Morton ranch near Douglas, centering in township 33n-71w, with plans for a test probably to be drilled this summer.

The California Co. reported its first failure in the Neiber Dome field, Washakie county, when the firm's No. 1 Govt.-Poe found the Embar lime too hard and tight for production. The well was drilled to 10,430 feet, topping Embar at 10,095 and Tensleep at 10,300. Two other wells in the field are producing sour crude from the Embar and flaring gas with a record high percentage of hydrogen sulfide.

Drilling activity may be resumed shortly in the Worland field, Washakie county, following completion of the new Texas Gulf Sulphur Co.'s desulphurization plant and Pure Oil Co.'s gasoline and crude oil stabilization plant, which are located in the field. Trial runs to separate sulfur from the deadly gas were being conducted late in February by Texas Gulf Sulphur. The plant is designed to process approximately 30 million cu-

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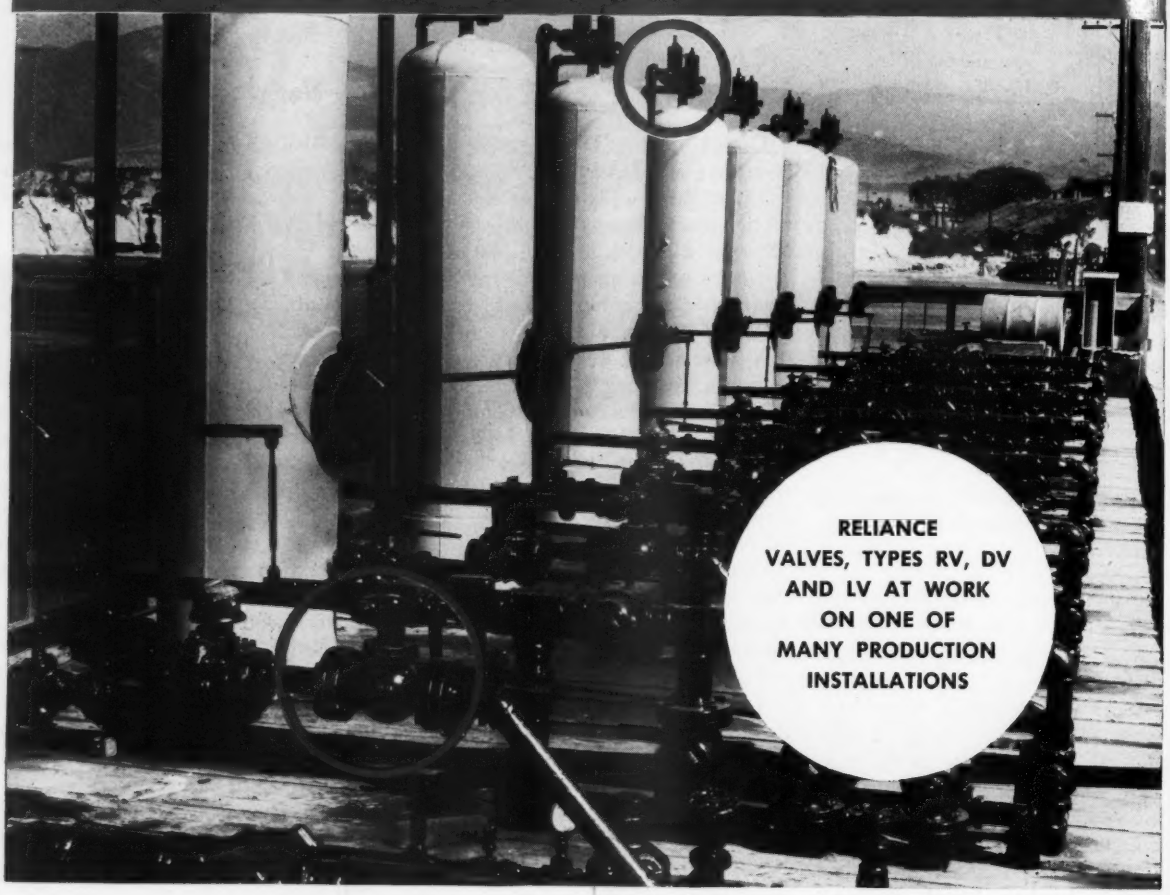

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bic feet of sour gas per day, returning the sweetened gas to Pure's plant for stripping gasoline and liquid hydrocarbons. The all-around operation is expected to produce 300 long tons of commercial sulfur daily, in addition to gasoline and liquid hydrocarbons. The dry gas will then be piped to a compressor station in the field, and carried by a new pipeline to Fallon county, Montana, where it will enter the Montana-Dakota Utilities' system. Work is starting on the new pipeline this winter.

Pure Oil Co. has been stymied with a fishing job for several weeks at its wildcat in the Badwater section of northwestern Natrona county, now bottomed at 14,146 feet. After the fish is recovered, the operator plans to carry the well down to around 16,000 feet. Pure is also reported planning to drill another below-14,000-footer in the West Poison Spider field 25 miles west of Casper this summer. It will be the second Frontier well in the deep field.

Rocky Mountains

Marked improvement was shown this winter in marketing of heavy black oils with high sulphur content, and operators are regarding John L. Lewis, boss of the striking coal miners, as a sort of supersalesman for the petroleum industry.

Production in most Wyoming black oil fields rose sharply in mid-January, and continued to increase substantially throughout February.

Hamilton Dome, near Thermopolis, Wyo., had increased from around 4,000 barrels per day at the start of the year to near its capacity of 10,000 barrels per day by mid-February. H. O. Batzer, mayor of Thermopolis and a heavy buyer of black crude, said he had increased purchases to around 4,000 barrels per day for movement by tank car to fuel oil markets in Lincoln, Omaha, Minneapolis and intermediate points.

Tank cars were moving an estimated 20,000 barrels per day of Tensleep crude from Big Horn Basin fields to fuel oil markets at Minneapolis. This compared to around 4,000 barrels per day moved at this time a year ago.

Spurts in black oil production were noted at Byron, Garland and Oregon Basin, all in Wyoming's Big Horn Basin, as the nation's railroads, facing a short coal supply, rushed to buy all diesel fuel available. Home owners with space heaters provided an increasing market for heating oils.

The situation bore out the prediction of Albert J. McIntosh, economist for Socony-Vacuum Oil Co., who forecast a 14 percent increase in home-heating, Diesel and other light fuels this year.

What with renewed discussion of severance taxes, Wyoming's special session of the legislature in Cheyenne late in February provided special concern for Rocky Mountain oil operators. The special session, while called specifically to deal with appropriating funds to combat grasshoppers, might bring up any number of other subjects.

The first measure dealing with petroleum was tossed in the hopper by State Senator Earl Bower of Washakie county, who told reporters that the bill would provide "a broad basis for conservation of Wyoming's oil and gas resources." He said "it is vital to the interests of the state that our oil and gas resources be conserved. Oil and gas production in Wyoming is of

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tremendous economic significance with our state fast becoming one of the leading producers."

Legislation of this sort has been advocated strenuously for many years by Pierre LaFleiche, state mineral supervisor, who has been handicapped by the state's present archaic laws governing conservation. It is thought the proposed measure will conform to the model conservation bill sponsored by the Interstate Compact Commission.

Montana

All members of the Montana Oil Conservation Board have been reappointed by Governor John W. Bonner for two-year terms expiring January 8, 1952.

An organizational meeting of persons interested in attending a Land Title Course covering the laws of oil and gas was held at the Billings Petroleum Club on January 20. Definite meeting dates were selected and a list of courses offered and instructors for each lecture were decided upon. The course is open to anyone whether directly associated with the oil industry or not.

New Mexico

The Oil Conservation Commission has set a daily allowable oil production of 143,000 for the month of February. This is an increase from 138,000 barrels daily in January. Commission officials said action was taken after oil men presented testimony to support the increase.

Wyoming

A new map of Wyoming, showing dry test wells, oil and gas fields, pipe lines, locations of anticlines, and unit areas of May 1, 1949, has just been published according to the Wyoming Geological Survey at Laramie. The map, numbered 107, is part of the U. S. Geological Survey oil and gas investigations series and is a complete revision of preliminary map 19 published in 1944.

Baird H. Markham, acting president, American Petroleum Institute, has named G. Stewart Brown, California Standard, and C. Haines Finnell, Union Oil, to the Oil Industry Information Committee for the current year. There were a total of 36 persons named.

Modern Fire Control

(Continued from Page 11)

wherever they can get within striking distance of a fire with the relatively short throw of a fog stream. For gas fires, it is the only means whereby heat can be absorbed so that control of sources of fuel can be put into effect. Gas fires must be starved. That is, they must be extinguished by cutting off the supply of fuel. The problem lies in shutting off the supply. The hazard lies in the effect of the heat on surrounding structures while the control measures are being worked out. The great value of the modern fog technique is that it protects both men and exposed equipment from the heat of the fire.

A midwestern plant, several years ago, installed a system whereby all bare LP vessels were protected by fixed water sprays. When a corroded line blew out and released a considerable volume of liquid gas (butane and heavier) it flashed from a nearby fire box. Water was turned on from remote control valves, about 100 feet away. The fire burned for about three hours but the coarse sprays gave adequate protection for the large lines, pumps, stanchions, etc. Small lines and electric conduit suffered damage. The tanks (about 10'x25' horizontals) had no damage and even the paint was intact after the fire.

Words alone cannot fully describe this modern approach to the fire problem; it must be seen to be appreciated and it must be taught in fire schools.

Let me summarize. Plant design must take into account the extreme potentiality of loss if large releases of liquid or vapor occur; hence design must be over-conservative. Maintenance and inspection must be provided for in the design, so that they will not be neglected in the field because units cannot be taken out of service without complete plant shutdown. Operating mistakes must be anticipated. That is a penalty of having to deal with human beings. But insofar as possible, mistakes of judgment on the part of operators must be guarded against by anticipating what could happen, and working additional safeguards into the design. Instruction is fine but training in actually doing the right thing in a simulated disaster drill is a lot better.

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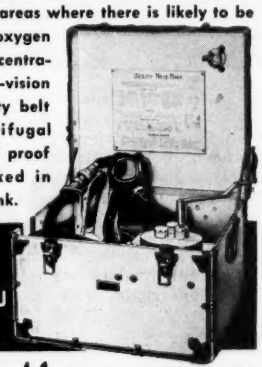

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Blast Curbs Tighten Up

The State Fish and Game Commission has tightened regulations governing undersea blasting operations in oil exploration by approving a new rule requiring oil operations engaged in such work to clean up all litter left along the California coast. The commission said in the future an observer from the state office will be required on each boat to make an inspection following each blast, rather than after a series of explosions. Also changed was the existing rule that the commission may sell fish killed by such activities to include a provision the commission may also give away fish so killed.

California Pipeline Set

Plans have been mapped for a new $5,000,000 gas pipeline to boost capacity of the present 30-in. carrier which brings gas to Southern California from Texas fields. A combination project of Southern California Gas Company and Southern Counties Gas Company, the new line will travel from Whitewater, near Palm Springs, to Puente. Work is scheduled to begin in April.

Ventura Asks Land Hearing

Officials of Ventura County have requested the Federal Government for a public hearing on a move to bar approximately 40,000 acres of ground in the Sespe area from possible oil development. The action was taken when the County Supervisors learned the Audubon Society had petitioned the Department of Interior's land management bureau to set aside such land as a refuge for condors.

Land Company Earnings Good

Earnings of Kern County Land Company from oil royalties alone were indicated in a report to the S.E.C. at $6.05 a share on the 2,000,000 shares outstanding. This compares with $5.32 earned from the same source in 1948.

Buena Park Well Rigging

Humble Oil & Refining Company is rigging to begin drilling its Buena Park Unit No. 1 on Sec. 36-3s-11w in the Buena Park area, Orange County. Richfield Oil's Peralta Hills No. 1 test on Sec. 3-4s-9w is digging at 4443 ft.

Dave Young, California independent operator, has left Los Angeles for Texas points, where he holds considerable oil interests. Deveolpment in Scurry County at present is his chief interest.

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Personalities IN THE NEWS

Shaffer Moves Up At Standard

Appointment of K. H. Shaffer as assistant general manager of its producing department has been announced by Standard Oil Company of California.

K. H. Shaffer

In his new position Shaffer will direct oil field development work for the company. First employed by Standard in 1929, Shaffer has worked in South America and California on engineering and organization problems relating to exploration and crude oil production.

For the last two years Shaffer has been manager of producing in Standard's northern district, with headquarters at Taft, California. He has previously served as manager of the organization and cost control division of the company's producing department, and as general manager of Standard's personnel and industrial relations department.

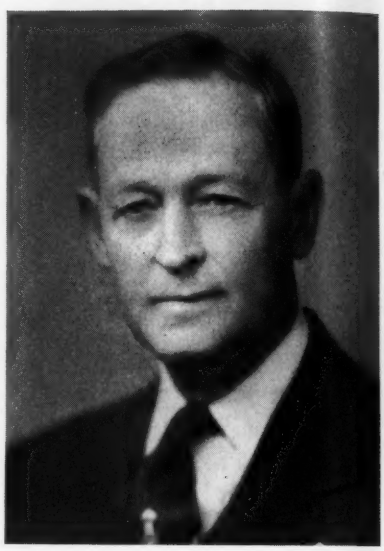
Other personnel changes in Standard's producing department include the appointment of C. W. Gibbs as manager of the company's northern district, and naming of F. A. Heitmeyer as general superintendent of producing in that area.

President L. F. McCollum of Continental Oil Company announces the election of a new vice president, new treasurer and the appointment of a new assistant to the president. Lloyd F. Thanhouser was named vice president. He will retain his present post as general counsel. R. L Bosworth was elected treasurer. He also is financial vice president of the company. A W. Tarkington, former treasurer, was appointed assistant to the president. Thanhouser, formerly a corporation attorney in New York, was appointed general counsel for Continental last year. Bosworth is a native of Oklahoma City. He has been with the company 27 years. Tarkington was born in Taylor, Texas, and joined Continental as treasurer in 1948.

E. G. (Gene) Starr, president of Universal Consolidated Oil Company, is back home in Los Angeles from an extended tour of Europe.

Union Oil President Reese H. Taylor presented the Freedom Foundation's regional awards to 10 persons and organizations at a Hollywood Advertising Club luncheon. Taylor, himself a holder of a foundation award, presented the honors at the Hollywood Roosevelt Hotel to those whom the foundation believed made outstanding contributions to the American way of life.

"Subsurface Geologic Methods" is being devised to meet the sales demand, the Colorado School of Mines, publisher of the book, announced. The book was compiled and edited by L. W. LeRoy, associate professor of geology, and Harry M. Crain, director of publications.



C. R. (Rex) Malone has been appointed District Representative, Basin Area, of Oil Well Supply Company, with headquarters at Long Beach, California, it was announced by D. S. Grubbs, Manager of the California Division. He will be responsible for all operations in that area. Mr. Malone started his career with Oilwell in 1923 as a clerk in the Long Beach store. Since then he has been located at Ventura, Bakersfield, and Los Angeles.

Kegley Retires from Times

Back in the hectic days of 1923, when Santa Fe Springs was getting under a full head of steam and C. C. Julian was promoting high, wide and handsome, Howard Kegley left the post of assistant city editor of the Los Angeles Times to create the first oil column ever printed by a Los Angeles daily.

Having written that column, Oil Field News, for 27 years, and served the Times for 33 years, Mr. Kegley is retiring from that position March 6. He is a prolific writer for general magazines, and has done many features for oil trade journals. It is his intention to continue his magazine work, and perhaps do some public relations and publicity work for companies and individuals engaged in the development of oil.

Raymond W. Todd Guest Speaker U. S. Navy Petroleum Unit

Raymond W. Todd, Chief Engineer of the Pacific Lighting Corporation, will be the guest speaker at the March meeting of the U. S. Naval Reserve Volunteer Petroleum Unit 11-3.

Raymond Todd

The Construction Division has arranged the meeting and Mr. Todd will set forth the general operations and practices pertaining to Construction in the Gas Industry and will give a general presentation of the Natural Gas Industry in Southern California as to its relationship with the Petroleum Industry.

Lt. Cmdr. Paul Wilkins of the General Petroleum Corporation's Torrance Refinery is the commanding officer of this Naval Reserve unit, composed of officers and enlisted men of the U. S. Naval Reserve who are associated in all branches of the petroleum industry and extends an invitation to anyone who is interested in Mr. Todd's discussion and in naval activities pertaining to the petroleum and gas industry to attend this meeting, to be held at 8 p.m., March 15th, at the Naval Reserve Center on Terminal Island in San Pedro.

A. H. Heller, geologist and engineer, whose land interests extend to a wide spread of ground in Eastern Nevada, has added real estate to his business operations. He has started construction on a $600,000 apartment building in Reno.

PB Names Wells District Manager

Jack Magoffin, sales manager of Patterson-Ballagh, division of Byron Jackson Co. announces the promotion of A. O. Wells. Wells will be the new district manager for PB in west Texas, with headquarters in Odessa, Texas. As assistants to Wells for the west Texas area will be Bob Shira, Gene Mitchell and Rhoal Lyles.

William Wallace Mein, Jr., vice president of Bishop Oil Company of San Francisco, has been named a member of the National Minerals Advisory Council by Interior Secretary Chapman. Mein also is vice president of the Calameras Cement Company, San Francisco. He has been secretary of the California State Mining Board since 1944. He is Western vice chairman of the industrial minerals division, American Institute of Mining and Metallurgical Engineers.

Edward R. Valentine, vice president of Fullerton Oil Company, is the new president of J. W. Robinson Company in Los Angeles. His grandfather, J. W. Robinson, founded the prominent department store 70 years ago. Valentine has been a member of the board of directors of Robinson's for 15 years and has been chairman of the board since October 28, 1949.

Johnson Again Heads I.R.A.

At the Fourteenth Annual Meeting of Independent Refiners' Association of California, Inc., held February 14, 1950, the following officers were elected:

C. A. Johnson, President.
D. B. O'Neill, Vice President and General Manager.
W. F. Barshfield, Vice President.
N. D. Taylor, Secretary-Treasurer.

Directors for the year 1950:

W. F. Barshfield, Harbor Refining Company.
B. E. Devere, Pathfinder Petroleum Company.
D. S. Fletcher, Fletcher Oil Company.
C. A. Johnson, Socal Oil & Refining Company.
M. M. McCallen, McCallen Refining Company.
G. A. Olson, Sunland Refining Corp.
N. D. Taylor, Hancock Oil Company.

Arthur C. Stewart, vice president, Union Oil Company, has been named chairman of the petroleum industry division of the 1950 Los Angeles Red Cross fund raising campaign. Stewart for some years past has been identified with various Red Cross committees. The oil executive this year also is one of six chairmen who will aid General Chairman Earle M. Jorgensen in the whole program.

To exchange ideas and develop new and better methods of serving Lane-Wells customers, this group of Lane-Wells executives met early in January in Los Angeles at the Managers Meeting. Left to right are (back row) Ray Masters, E. A. Miller, L. H. Ingle, D. R. Dillehay, Val L. Forsyth, Morton T. Higgs, Jas. D. Hughes, W. S. Keim, Jr., R. A. Hancock, Frank A. Taylor, P. M. Terrill, W. A. Miller, (Front Row) C. F. Ludwig, R. B. Downing, D. S. Jeppson, Norman L. Dorn, John J. Neale and J. W. McPhee.

California Oil World's Monthly Summary

CALIFORNIA DEVELOPMENT AND PRODUCTION

	DECEMBER, 1949, DEVELOPMENT				PRODUCTION	
	Active Drilling Wells	Oil Wells Completed	Initial Production B/D	Oil Wells Completed 1949	Daily Average December 1949	Daily Average December 1948
SAN JOAQUIN VALLEY REGION						
Ant Hill	.....	.....	.....	.....	707	941
Antelope Hills	.....	.....	.....	.....	1,094	1,337
Bellevue	.....	.....	.....	.....	214	264
Belridge—North	.....	.....	.....	3	3,362	3,303
Belridge—South	.....	.....	.....	83	2,566	7,213
Blackwell's Corner	.....	.....	.....	.....	106	125
Buena Vista	1	.....	.....	12	33,802	44,502
Calder	1	.....	.....	2	192	.....
Canal	.....	.....	.....	.....	1,895	1,894
Coalinga Group						
Eastside	.....	.....	.....	16	12,391	19,524
Oil City	.....	.....	.....	.....	77	69
Coalinga—Nose	.....	.....	.....	.....	42,625	53,880
Coalinga—Northeast	.....	.....	.....	.....	4,444	9,220
Guijarral Hills	10	8	3,425	56	13,032	1,602
Pleasant Valley	.....	.....	.....	1	2,668	3,604
Jacalitos	1	.....	.....	9	5,405	6,857
Westside	1	1	34	26	4,350	6,509
Coles Levee—North	.....	.....	.....	9	16,905	17,662
Coles Levee—South	.....	.....	.....	1	2,922	2,842
Edison	1	5	641	50	9,890	11,769
Elk Hills	7	2	513	43	10,863	2,466
Fruitvale	1	.....	.....	20	7,660	6,666
Gosford, East	1	.....	.....	12	1,451	125
Greeley	.....	.....	.....	1	11,199	13,949
Helm	.....	.....	.....	.....	2,435	2,827
Kern Bluff	.....	.....	.....	38	1,429	2,773
Kern Front	.....	.....	.....	3	5,773	8,390
Kern River	.....	.....	.....	51	7,747	12,687
Kettleman North Dome	.....	2	799	8	31,175	34,085
Lanare	.....	.....	.....	.....	1,005	1,314
Lost Hills	.....	.....	.....	6	5,691	8,136
McKittrick Group						
Belgian Anticline	.....	.....	.....	4	1,434	1,238
Cymric	.....	.....	.....	5	7,930	12,951
McKittrick	.....	.....	.....	.....	735	2,802
McKittrick Front	.....	.....	.....	.....	721	1,453
Salt Creek	.....	.....	.....	2	3,571	5,195
Sheep Springs	.....	.....	.....	.....	593	633
Temblor Ranch	.....	.....	.....	1	66	91
Midway-Sunset	4	2	45	70	30,337	40,780
Mt. Poso Group	.....	.....	.....	9	10,754	11,940
Mountain View	1	1	10	11	3,272	3,442
Paloma	2	3	844	16	9,773	12,356
Poso Creek Group	.....	.....	.....	1	1,810	2,943
Pyramid Hills	1	1	14	1	214	213
Race Track Hill	.....	.....	.....	1	1,768	1,871
Raisin City	2	2	151	13	4,048	2,964
Rio Bravo	.....	.....	.....	.....	10,187	12,009
Riverdale	.....	.....	.....	.....	2,577	2,671
Round Mountain Group	.....	.....	.....	4	6,047	7,219
Russell Ranch	5	3	667	84	23,250	9,633
South Cuyama Valley	9	16	16,774	61	9,422	.....
Strand	.....	.....	.....	.....	555	629
Strand—East	.....	.....	.....	.....	453	424
Tejon Ranch	2	1	127	5	2,195	2,638
Ten Section	.....	.....	.....	4	5,852	7,001
Union Avenue	.....	.....	.....	.....	155	250
Wasco	.....	.....	.....	.....	259	76
Wheeler Ridge	.....	1	133	7	808	652
Other Fields	1	5	323	52	2,814	1,656
TOTAL—San Joaquin Valley Region	51	53	24,500	801	386,675	432,265
COASTAL REGION						
Santa Maria District						
Barham Ranch (Los Alamos)	.....	.....	.....	.....	.....	.....
Casmalia	.....	.....	.....	4	318	1,304
Cat Canyon—East	.....	.....	.....	1	50	619
Cat Canyon—West	.....	.....	.....	18	11,844	18,132
Four Deer	.....	.....	.....	2	371	728
Gato Ridge	.....	.....	.....	.....	2,998	3,507

	DECEMBER, 1949, DEVELOPMENT				PRODUCTION	
	Active Drilling Wells	Oil Wells Completed	Initial Production B/D	Oil Wells Completed 1949	Daily Average December 1949	Daily Average December 1948
COASTAL REGION—Continued						
Guadalupe	.....	.....	.....	3	.....	50
Lompoc	.....	.....	.....	.....	33	6,614
Olivera Canyon	.....	.....	.....	2	14	693
Orcutt	.....	.....	.....	13	4,607	4,703
Santa Maria Valley	.....	.....	.....	4	12,533	18,893
Tinaquaic	.....	.....	.....	.....	19	8
Zaca Creek	.....	.....	.....	5	.....	3,034
Santa Barbara District						
Capitan	.....	.....	.....	.....	2,369	2,013
Coal Oil Point	.....	.....	.....	.....	.....	.....
Elwood	2	.....	.....	2	6,813	7,439
Santa Barbara	.....	.....	.....	.....	25	76
Summerland	.....	.....	.....	1	18	31
Ventura District						
Montalvo West	1	.....	.....	3	627	629
Padre Canyon	2	.....	.....	9	6,317	6,534
Rincon	1	2	229	10	3,762	3,350
San Miguelito	2	2	1,530	13	6,619	7,413
Ventura Avenue	14	2	997	57	56,995	52,097
North Santa Clara Valley District						
Del Valle	3	2	271	21	8,343	9,969
Hopper Canyon	.....	.....	.....	.....	141	132
Oak Canyon	.....	.....	.....	.....	1,668	1,861
Ojai Group	1	1	151	12	427	565
Sespe Canyon Group	1	.....	.....	9	351	197
Temescal	.....	.....	.....	.....	484	526
Others	1	.....	.....	3	53	60
South Santa Clara Valley District						
Aliso Canyon	1	1	161	8	3,390	3,528
Bardsdale	1	.....	.....	13	1,810	1,291
Newhall-Potrero	2	.....	.....	11	8,226	8,407
Oxnard	.....	.....	.....	.....	329	1,075
Placerita Canyon	6	33	6,295	233	27,177	.....
Shiells Canyon	1	.....	.....	2	818	968
South Mountain	1	1	198	32	6,941	6,402
West Mountain	.....	.....	.....	4	704	837
Others	.....	.....	.....	.....	646	1,481
Miscellaneous	1	1	74	38	507	1,354
TOTAL—Coastal Region	41	45	9,906	533	178,347	176,520
LOS ANGELES REGION						
Brea-Olinda	.....	1	36	17	10,785	15,312
Coyote—East	2	.....	.....	12	4,074	5,119
Coyote—West	.....	.....	.....	16	11,649	15,063
Dominguez	2	1	102	6	12,175	12,962
Dominguez, East	.....	.....	.....	1	22	22
Dominguez, Southeast	.....	1	684	4	529	333
East Los Angeles	1	.....	.....	4	1,274	986
El Segundo	.....	.....	.....	.....	340	290
Huntington Beach	6	3	199	89	53,927	58,886
Inglewood	.....	1	26	20	13,216	13,327
Lawndale	.....	.....	.....	1	524	1,215
Long Beach	2	4	414	34	22,357	22,992
Montebello	1	.....	.....	9	6,260	6,596
Newport	.....	.....	.....	3	5,299	6,763
Playa Del Rey	.....	.....	.....	.....	1,666	1,805
Potrero	.....	.....	.....	6	1,662	1,121
Richfield	1	3	210	18	6,242	6,212
Rosecrans-Athens Group	.....	.....	.....	17	6,332	4,808
Santa Fe Springs	1	1	35	6	14,642	15,014
Seal Beach	1	.....	.....	8	11,337	11,623
Torrance	.....	.....	.....	5	7,160	7,844
Whittier	.....	.....	.....	1	594	889
Wilmington	11	7	1,593	151	109,114	129,288
Yorba Linda	.....	.....	.....	2	132	998
Other Fields	2	.....	.....	12	2,080	1,510
TOTAL—Los Angeles Region	30	22	3,299	442	303,392	340,978
EXPLORATORY						
Outpost Wells	22	.....	.....	.....	.....	.....
Wildcats	17	.....	.....	.....	.....	.....
Gas Wells	1	2	Gas	39	.....	.....
Abandoned Drilling Wells	.....	102	.....	663	.....	.....
TOTAL CALIFORNIA	162	224	37,705	2,478	868,414	949,763

New Type Drill Collar Announced by National Supply

A new type of drill collar with replaceable ends, designed to minimize the problem of joint failures, is announced by The National Supply Company, Spang-Chalfant Division, P. O. Box 298, Pittsburgh 30, Pa. Service records have been obtained for the new collars in eight different wells drilling a total of 32,000 feet.

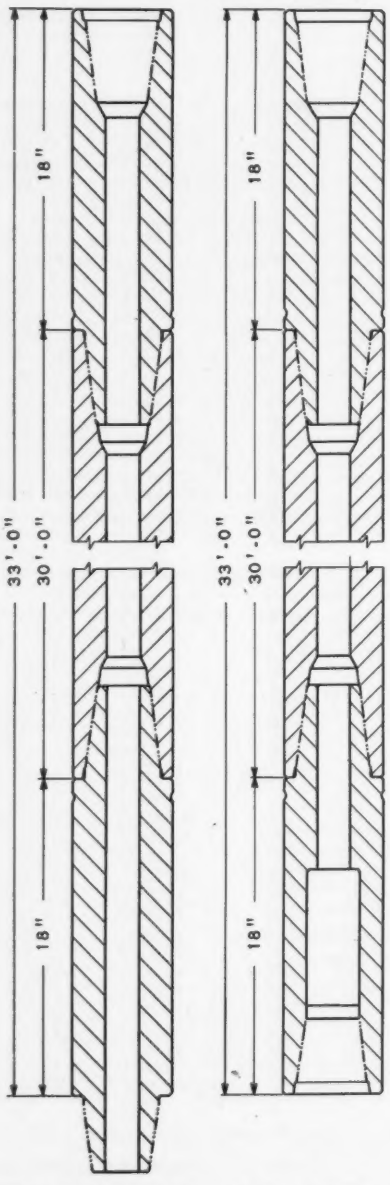


Figure I—Typical box pin type replaceable end drill collar assembly complete with ends.

Figure II—Typical double box type replaceable end drill collar assembly complete with ends.

The Ideal replaceable end drill collar has wear subs more or less permanently affixed at both ends. The new drill collar assembly consists of a double-box collar body equipped with a box and pin sub on the upper end and a double pin sub on the lower end. If a collar is used continuously at the bottom of the string both ends have box and pin subs and the bit shank can be connected directly to the lower end. The sub can be lengthened enough to be counter-bored for a float valve recess, if necessary.

Replaceability of the ends is the principal advantage of the new type collars. Whenever a taper joint failure occurs, or the outside diameter has been reduced enough to warrant replacement, any Ideal replaceable end can be removed and replaced with a spare end on the rig without any special equipment or supervision. This can be done in the same way as the taper joint connection would be broken out in coming out of the hole with the string except that somewhat greater torque may be required. The failed sub and possibly the mating sub, if damaged may be sent to the shop for cutback and rethreading without shortening the collar string or delaying drilling operations. The reconditioned subs are returned later to stock as spares.

Replaceable ends are usually made long enough for about two cut-backs. At least 4 in. must be allowed for each cut-back and a minimum length of 8 to 10 in. for tonging. A shoulder-to-shoulder length of 18-in. is ample for two cut-backs.

Bore and O.D. of replaceable ends are the same as that of drill collar bodies to which they are attached. With no larger bore than this they have a substantial cross-sectional area at the root of the last engaged thread on the pin member of both the taper joint and the semi-permanent connection. An equivalent O.D. assures adequate shoulder area between end and collar body, thus giving a rigid, fatigue-resistant, semi-permanent connection, and avoiding the secondary zone of weakness when collars are necked down to shrink on tool joints.

Available size and style range includes 2⅜ in. to 6⅝ in. regular, 2⅜ in. to 5½ in. IF, and 3½ in. to 6⅝ in. FH.

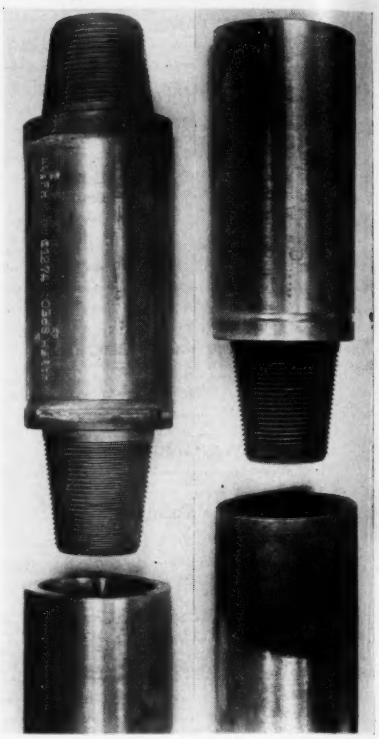


Fig. III—Box and pin type replaceable end sub for upper end of a replaceable end drill collar assembly.

Fig. IV—Double pin type replaceable end for lower end of replaceable end collars.

Byron Jackson Co. Announces New Catalog

Byron Jackson Co. have announced availability of their new 1950 catalog. Complete with illustrations, specifications, parts lists and other data, the catalog covers the entire line of BJ products. Di-

vided by sections the catalog includes hooks, links, powerslips, casing spiders, elevators, tongs, kelly bushings, tubing catchers, underreamers, core drills, parts for obsolete tools and lubrication instructions. Available also is the current price list No. 50 and discount sheet. Address: Byron Jackson Co., P.O. Box 2017 Terminal Annex, Los Angeles 54, California.

Suit Filed by B-J

Oil men will be interested in a patent infringement suit recently filed in the Federal District Court in Los Angeles by Welex Jet Services, Inc., of Fort Worth, Texas and Byron Jackson Co., of Los Angeles, against McCullough Tool Co., Inc., alleging infringement of a basic patent covering the recently developed explosive jet process of casing perforating.

This process perforates casing by a high-velocity jet from an explosive charge similar to that used in the famed "Bazooka" anti-tank rifle grenade developed during World War II. Its effectiveness has resulted in wide-spread commercial use of the process by the co-plaintiffs and by the casing perforating service companies which have been licensed by Byron Jackson Co. to operate the process.

B S & B Issues New Catalog

A new catalog on the Automatic Blow Case has just been issued by Black, Sivalls & Bryson, Inc., 720 Delaware, Kansas City 6, Missouri.

This catalog is available to any interested parties, and can be obtained by writing the home office of the company or any of its branches.

Get Acquainted Meeting of Pacific District Petroleum Equipment Suppliers Association

On March 9, 1950, the executives and department heads of members of the Pacific District of Petroleum Equipment Suppliers Association will meet in the Embassy Room of the Ambassador Hotel, in Los Angeles.

The purpose of the meeting is to enable executives and department heads of the Management, Sales, Engineering, Purchasing, Credit, Production, Personnel, Accounting, Advertising and Warehousing divisions of the member organizations to become acquainted, and to brief them on the activities, aims and ideals of the association.

Starting with the showing of a motion picture of interest to all members, at 3:30 P.M. in the Ambassador Theatre, cocktail hour is to follow from 6:00 to 7:00; and dinner thereafter.

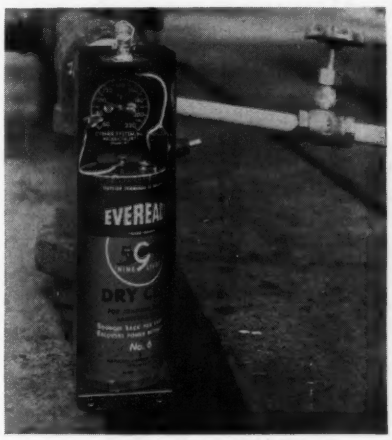
The principal speaker at the afternoon meeting will be J. A. Crawford, of Youngston Steel Products Company of California, one of the founders and at present a director of the Association. Ted Sutter will act as Chairman, and lead a discussion on matters of general interest.

Reservations should be made through W. F. Pusch, Supervisor of the Pacific District of the Association, at 712 Banks-Huntley Bldg., Los Angeles 14; telephone MIchigan 4327.

John Sherborne, Union Oil Company, and Paul Andrews, Signal Oil & Gas Company, Los Angeles, presided over a seminar discussion on the relationship of production technology to the present and future requirements of the oil industry at the 1950 annual meeting of the American Institute of Mining and Metallurgical Engineers. The meeting was held in New York City.

Cypher System Introduces New Product

The Cypher System, Incorporated of Long Beach has recently perfected a new product known as the "Productalert," a signal device which is a self-contained unit for lighting a signal light when a well is off or down in production. It is composed of a bi-metal thermometer installed in the lead line of an oil well which indicates the temperature of the well fluid when the well is producing at its normal rate. If the well goes off production the consequent drop in temperature closes a contact which lights the signal light as a warning.



Close setting of this contact point on the dial of the thermometer can be used to signal any desired reduction in flow based on the operators requirements. It has particular value where several wells are producing into the same tank setting, to determine which well is down in production. Where frequent holes in the tubing are a well characteristic the "Productalert," gives an immediate signal for shutting down the well thus reducing rod and tubing wear in the dry tubing and preventing pump scoring which usually accompanies this oil well failure.

Cypher System service men install the "Productalert," and set the contacts to fit the needs of the particular well.

Literature is available by phoning Long Beach 4-8677, or writing to 844 East Willow Street, Long Beach 6, California.

"Give me a kiss like a good girl."

"Well, all right; but if I gave you one like a naughty girl, you'd like it better."

LAUGH THIS OFF!!

A man took his dog to the vet's and insisted that the vet cut off the dog's tail. The vet was reluctant to perform the unnecessary operation, and there was quite an argument for a few minutes. Finally the man said, "Well, I'll tell you why I want you to cut off the dog's tail. My mother-in-law is coming for a visit and I don't want a single thing around the house to welcome her!"

Every morning Bill and Joe had coffee together, and every morning Bill watched Joe put six spoonsful of sugar in his coffee. Finally he could stand it no longer and asked: "Doesn't that make your coffee awfully sweet?" To which Joe replied, "Well, it's all right if you don't stir it."

A drunk ambled into a store one day whereupon the owner asked him if he didn't think he'd better go home and sober up.

"Misshen, lister," the drunk said with dignity, "I only had tee martoonies and I'm not as much under the affluence of inkahol as some thinkle may peep, and the drunker I stand here the longer I get!"

He: "When anything goes wrong around the house I always fix it."

She: "Oh, yeah? Since you fixed the clock, the cuckoo backs out and asks, 'What time is it?'"

"Cheer up, Bill. A woman's 'no' often means 'yes'."

Bill: "Yeah, but how about her 'phooey'?"

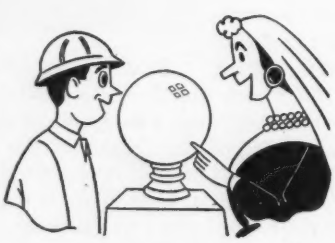
Jim watched Tim finish a prodigious amount of food at lunch the other day and remarked: "You certainly must enjoy your food." Tim replied: "Oh, no, not at all. It's just that I'm nuts about bicarbonate of soda."

A sweet young thing pulled up to the curb and smiled sweetly when the policeman told her sternly that she had been doing seventy-five.

"Isn't that marvelous!" she exclaimed. "And I'm only learning to drive!"

Jill: "Father, why didn't you tell me you had the bench in the garden painted? My boy friend and I sat on it last night and he got paint on his pants."

HUNTING FOR OIL?



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